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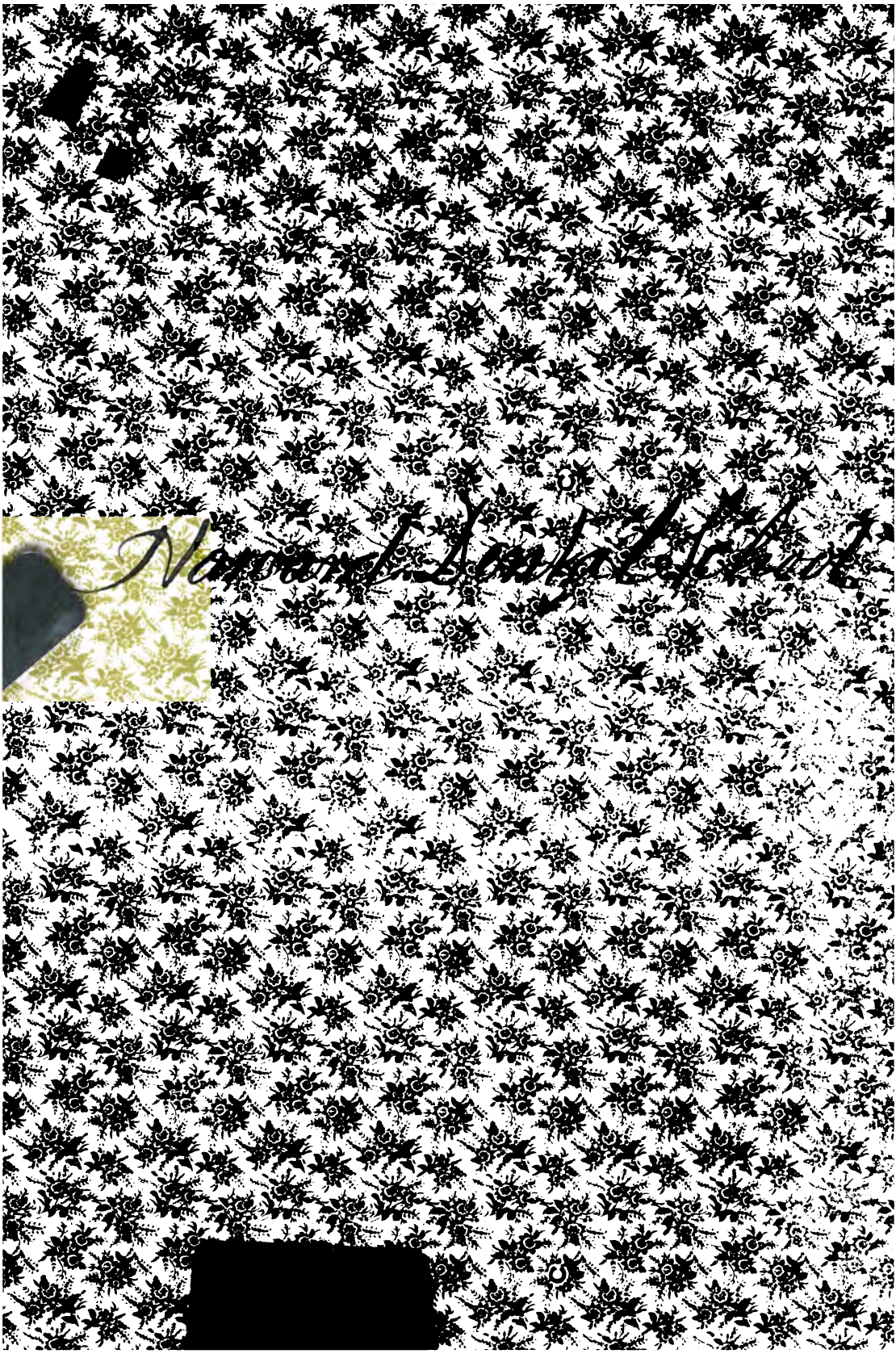

TRANSACTIONS

OF THE

AMERICAN DENTAL ASSOCIATION

AT THE

THIRTIETH ANNUAL SESSION,

HELD AT

EXCELSIOR SPRINGS, MO.

COMMENCING ON THE 5TH OF AUGUST, 1890.

BOSTON MEDICAL LIBRARY ASS'N
NOV 8 1893

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THE AMERICAN DENTAL ASSOCIATION, although formally accepting and publishing the reports of the various Standing Committees and the essays read before the Association, holds itself wholly irresponsible for the opinions, theories, or criticisms therein contained, except when otherwise decided by special resolution.—*Constitution.*

CATALOGUED,
J. F. B.
11.8.1893

PRESS OF MCCLUER PRINTING CO.
CHICAGO.

LIST OF OFFICERS FROM DATE OF ORGANIZATION.

PRELIMINARY CONVENTION, NIAGARA FALLS, AUGUST, 1859.

President,	W. W. ALLPORT	Chicago, Ill.
Secretary,	J. TAFT	Cincinnati, Ohio.

ORGANIZATION AND FIRST SESSION OF ASSOCIATION, WASHINGTON, D. C., JULY, 1860.

[Annual meetings to be hereafter last Tuesday in July.]

President,	W. H. ATKINSON	Cleveland, Ohio.
1st Vice-President,	J. B. GIBBS	Washington, D. C.
2d Vice-President,	W. CAHOON	Detroit, Mich.
Recording Secretary,	J. TAFT	Cincinnati, Ohio.
Corresponding Secretary,	W. MUIR ROGERS	Shelbyville, Ky.
Treasurer,	S. DILLINGHAM	Philadelphia, Pa.

[NO MEETING IN 1861.]

CLEVELAND, JULY, 1862.

President,	GEO. WATT	Xenia, Ohio.
1st Vice-President	W. H. ALLEN	New York City.
2d Vice-President,	W. D. STONE	Lexington, Ky.
Recording Secretary,	J. TAFT	Cincinnati, Ohio.
Corresponding Secretary,	J. F. JOHNSTON	Indianapolis, Ind.
Treasurer,	W. A. PEASE	Dayton, Ohio.

PHILADELPHIA, JULY, 1863.

President,	W. H. ALLEN	New York City.
1st Vice-President	J. H. MCQUILLEN	Philadelphia, Pa.
2d Vice-President,	WM. B. HURD	Brooklyn, N. Y.
Recording Secretary,	J. TAFT	Cincinnati, Ohio.
Corresponding Secretary,	C. R. BUTLER	Cleveland, Ohio.
Treasurer,	A. C. HAWES	New York City.

NIAGARA FALLS, JULY, 1864.

President,	J. H. MCQUILLEN	Philadelphia, Pa.
1st Vice-President,	C. P. FITCH	New York City.
2d Vice-President,	H. BENEDICT	Detroit. Mich.
Recording Secretary,	J. TAFT	Cincinnati, Ohio.
Corresponding Secretary,	GEO. W. ELLIS	Philadelphia, Pa.
Treasurer,	I. J. WETHERBEE	Boston, Mass.

CHICAGO, JULY, 1865.

President,	C. W. SPALDING	St. Louis, Mo.
1st Vice-President,	GEO. H. CUSHING	Chicago, Ill.
2d Vice-President,	JAS. MCMANUS	Hartford, Conn.
Recording Secretary,	J. TAFT	Cincinnati, Ohio.
Corresponding Secretary,	L. D. SHEPARD	Boston, Mass.
Treasurer,	I. J. WETHERBEE	Boston, Mass.

BOSTON, JULY, 1866.

President,	C. P. FITCH	New York City.
1st Vice-President	W. H. MORGAN	Nashville, Tenn.
2d Vice-President,	L. D. SHEPARD	Boston, Mass.
Recording Secretary,	J. TAFT	Cincinnati, Ohio.
Corresponding Secretary,	A. HILL	Norwalk, Conn.
Treasurer,	W. W. SHEFFIELD	New London, Conn.

CINCINNATI, JULY, 1867.

President,	A. LAWRENCE	Lowell, Mass.
1st Vice-President,	P. G. C. HUNT	Indianapolis, Ind.
2d Vice-President,	A. S. TALBERT	Lexington, Ky.
Recording Secretary,	J. TAFT	Cincinnati, Ohio.
Corresponding Secretary,	C. R. BUTLER	Cleveland, Ohio.
Treasurer,	W. H. GODDARD	Louisville, Ky.

NIAGARA FALLS, JULY, 1868.

President,	JONATHAN TAFT	Cincinnati, Ohio.
1st Vice-President,	HOMER JUDD	St. Louis, Mo.
2d Vice-President,	A. A. BLOUNT	Springfield, Ohio.
Recording Secretary,	EDGAR PARK	St. Louis, Mo.
Corresponding Secretary,	JAS. MCMANUS	Hartford, Conn.
Treasurer,	W. H. GODDARD	Louisville, Ky.

SARATOGA SPRINGS, AUGUST, 1869.*

President,	HOMER JUDD	St. Louis, Mo.
1st Vice-President,	S. J. COBB	Nashville, Tenn.
2d Vice-President,	C. E. FRANCIS	New York City.
Recording Secretary,	M. S. DEAN	Chicago, Ill.
Corresponding Secretary,	I. A. SALMON	Boston, Mass.
Treasurer,	W. H. GODDARD	Louisville, Ky.

NASHVILLE, AUGUST, 1870.

President,	W. H. MORGAN	Nashville, Tenn.
1st Vice-President,	S. W. DENNIS	San Francisco, Cal.
2d Vice-President,	J. R. WALKER	New Orleans, La.
Recording Secretary,	M. S. DEAN	Chicago, Ill.
Corresponding Secretary,	I. A. SALMON	Boston, Mass.
Treasurer,	W. H. GODDARD	Louisville, Ky.

*Owing to a change in the Constitution, officers elected at this and the sessions following served at the next annual meeting subsequent to their election; and the sessions of and after 1869 commenced on the first Tuesday in August.

WHITE SULPHUR SPRINGS, VA., AUGUST, 1871.

President,	GEO. H. CUSHING	Chicago, Ill.
1st Vice-President,	C. E. FRANCIS	New York City.
2d Vice- President,	J. R. WALKER	New Orleans, La.
Recording Secretary,	M. S. DEAN	Chicago, Ill.
Corresponding Secretary,	I. A. SALMON	Boston, Mass.
Treasurer,	W. H. GODDARD	Louisville. Ky.

NIAGARA FALLS, AUGUST, 1872.

President,	P. G. C. HUNT	Indianapolis, Ind.
1st Vice-President,	L. D. SHEPARD	Boston, Mass.
2d Vice-President,	G. A. MILLS	Brooklyn, N. Y.
Recording Secretary,	M. S. DEAN	Chicago, Ill
Corresponding Secretary,	J. TAFT	Cincinnati, Ohio.
Treasurer,	W. H. GODDARD	Louisville, Ky.

PUT-IN-BAY, AUGUST, 1873.

President,	T. L. BUCKINGHAM	Philadelphia, Pa.
1st Vice-President,	ISAIAH FORBES	St. Louis, Mo.
2d Vice-President,	A. F. MCLAIN	New Orleans, La.
Recording Secretary,	M. S. DEAN	Chicago, Ill.
Corresponding Secretary,	J. TAFT	Cincinnati, Ohio.
Treasurer,	W, H. GODDARD	Louisville, Ky.

DETROIT, AUGUST, 1874.

President,	M. S. DEAN	Chicago, Ill.
1st Vice-President,	GEO. W. KEELY	Oxford, Ohio.
2d Vice-President	J. S. KNAPP	New Orleans, La.
Recording Secretary,	C. STODDARD SMITH	Springfield, Ill.
Corresponding Secretary,	GEO. L. FIELD	Detroit, Mich.
Treasurer,	W. H. GODDARD	Louisville, Ky.

NIAGARA FALLS, AUGUST, 1875.

President,	A. L. NORTHROP	New York City.
1st Vice-President,	H. J. MCKELLOPS	St. Louis, Mo.
2d Vice-President,	H. A. SMITH	Cincinnati, Ohio.
Recording Secretary,	C. STODDARD SMITH	Springfield, Ill.
Corresponding Secretary,	J. H. MCQUILLEN	Philadelphia, Pa.
Treasurer,	W. H. GODDARD	Louisville, Ky.

PHILADELPHIA, AUGUST, 1876.

President,	GEO. W. KEELY	Oxford, Ohio.
1st Vice-President,	C. N. PEIRCE	Philadelphia, Pa.
2d Vice-President,	CORYDON PALMER	New York City.
Recording Secretary,	C. STODDARD SMITH	Springfield, Ill.
Corresponding Secretary,	J. H. MCQUILLEN	Philadelphia, Pa.
Treasurer,	W. H. GODDARD	Louisville, Ky.

CHICAGO, AUGUST, 1877.

President,	F. H. REHWINKEL	Chillicothe, Ohio.
1st Vice-President,	L. D. SHEPARD	Boston, Mass.
2d Vice-President,	GEO. T. BARKER	Philadelphia, Pa.
Recording Secretary,	M. S. DEAN	Chicago, Ill.
Corresponding Secretary,	M. H. WEBB	Lancaster, Pa.
Treasurer,	W. H. GODDARD	Louisville, Ky.

NIAGARA FALLS, AUGUST, 1878.

President,	H. J. MCKELLOPS	St. Louis, Mo.
1st Vice-President,	L. D. SHEPARD	Boston, Mass.
2d Vice-President,	L. D. CARPENTER	Atlanta, Ga.
Recording Secretary,	GEO. H. CUSHING	Chicago, Ill.
Corresponding Secretary,	A. O. RAWLS	Lexington, Ky.
Treasurer,	W. H. GODDARD	Louisville, Ky.

NIAGARA FALLS, AUGUST, 1879.

President,	L. D. SHEPARD	Boston, Mass.
1st Vice-President,	C. N. PEIRCE	Philadelphia, Pa.
2d Vice-President,	GEO. L. FIELD	Detroit, Mich.
Recording Secretary,	GEO. H. CUSHING	Chicago, Ill.
Corresponding Secretary,	M. H. WEBB	Lancaster, Pa.
Treasurer,	W. H. GODDARD	Louisville, Ky.

BOSTON, AUGUST, 1880.

President,	C. N. PEIRCE	Philadelphia, Pa.
1st Vice-President,	W. C. BARRETT	Buffalo, N. Y.
2d Vice-President,	GEO. J. FRIEDRICHS	New Orleans, La.
Recording Secretary	GEO. H. CUSHING	Chicago, Ill.
Corresponding Secretary,	A. M. DUDLEY	Salem, Mass.
Treasurer,	W. H. GODDARD	Louisville, Ky.

NEW YORK, JULY, 1881.

President,	H. A. SMITH	Cincinnati, Ohio.
1st Vice-President,	W. C. BARRETT	Buffalo, N. Y.
2d Vice-President,	GEO. J. FRIEDRICHS	New Orleans, La.
Recording Secretary,	GEO. H. CUSHING	Chicago, Ill.
Corresponding Secretary,	A. M. DUDLEY	Salem, Mass.
Treasurer,	W. H. GODDARD	Louisville, Ky.

CINCINNATI, AUGUST, 1882.

President,	W. H. GODDARD,	Louisville, Ky.
1st Vice-President,	GEO. J FRIEDRICHS	New Orleans, La.
2d Vice-President,	E. T. DARBY	Philadelphia, Pa.
Recording Secretary,	GEO. H. CUSHING	Chicago, Ill.
Corresponding Secretary,	A. W. HARLAN	Chicago, Ill.
Treasurer,	GEO. W. KEELY	Oxford, Ohio.

NIAGARA FALLS, AUGUST, 1883.

President,	E. T. DARBY	Philadelphia, Pa.
1st Vice-President,	C. S. STOCKTON	Newark, N. J.
2d Vice-President,	T. T. MOORE	Columbia, S. C.
Recording Secrectary,	GEO. H. CUSHING	Chicago, Ill.
Corresponding Secretary,	A. W. HARLAN	Chicago, Ill.
Treasurer,	GEO. W. KEELY	Oxford, Ohio.

SARATOGA SPRINGS, AUGUST, 1884.

President,	J. N. CROUSE	Chicago, Ill.
1st Vice-President,	M. W. FOSTER	Baltimore, Md.
2d Vice-President,	C. F. RICH	Saratoga, N. Y
Recording Secretary,	GEO. H. CUSHING	Chicago, Ill.
Corresponding Secretary,	A. W. HARLAN	Chicago, Ill.
Treasurer,	GEO. W. KEELY	Oxford, Ohio.

MINNEAPOLIS, AUGUST, 1885.

President,	W. C. BARRETT	Buffalo, N. Y.
1st Vice-President,	L. C. INGERSOLL	Keokuk, Iowa.
2d Vice-President,	A. T. SMITH	Minneapolis, Minn.
Recording Secretary,	GEO. H. CUSHING	Chicago, Ill.
Corresponding Secretary,	A. W. HARLAN	Chicago, Ill.
Treasurer,	GEO. W. KEELY	Oxford, Ohio.

NIAGARA FALLS 1886.

President,	W. W. ALLPORT	Chicago, Ill.
1st Vice-President,	GEO. W. MCELHANEY	Columbus, Ga.
2d Vice-President,	S. W. DENNIS	San Francisco, Cal.
Recording Secretary,	GEO. H. CUSHING	Chicago, Ill.
Corresponding Secretary,	A. W. HARLAN	Chicago, Ill.
Treasurer,	GEO. W. KEELY	Oxford, Ohio.

NIAGARA FALLS, 1887.

President,	FRANK ABBOTT	New York City.
1st Vice-President,	CHARLES R. BUTLER	Cleveland, Ohio.
2d Vice-President,	T. SOLLERS WATERS	Baltimore, Md.
Recording Secretary,	GEO. H. CUSHING	Chicago, Ill.
Corresponding Secretary,	FRED. A. LEVY	Orange, N. J.
Treasurer,	GEO. W. KEELY	Oxford, Ohio.

LOUISVILLE, KY., 1888.

President,	C. R. BUTLER	Cleveland, Ohio.
1st Vice-President,	A. W. HARLAN	Chicago, Ill.
2d Vice-President,	SAMUEL A. WHITE	Savannah, Ga.
Recording Secretary,	GEO. H. CUSHING	Chicago, Ill.
Corresponding Secretary,	FRED. A. LEVY	Orange, N. J.
Treasurer,	A. H. FULLER	St. Louis, Mo.

List of Officers

Saratoga Springs, 1889

President.	M. W. Foster	Baltimore, Md.
1st Vice-President.	A. W. Harlan	Chicago, Ill.
2d Vice-President.	J. D. Patterson	Kansas City, Mo.
Recording Secretary	Geo. H. Cushing	Chicago, Ill.
Corresponding Secretary	Fred. A. Levy	Orange, N. J.
Treasurer.	A. H. Fuller	St. Louis, Mo.

Excelsior Springs, Mo., 1890.

President.	A. W. Harlan	Chicago, Ill.
1st Vice-President.	J. D. Patterson	Kansas City, Mo.
2d Vice-President.	H. B. Noble	Washington, D. C.
Recording Secretary	Geo. H. Cushing	Chicago, Ill.
Corresponding Secretary	Fred. A. Levy	Orange, N. J.
Treasurer.	A. H. Fuller	St. Louis, Mo.

Executive Committee for Session of 1891.

J. N. Crouse, Chairman. C. N. Peirce, Secretary.

First Division—Committee of Arrangements.

*J. N. Crouse. W. W. Walker. L. D. Shepard.

Second Division—On Credentials, Ethics and Auditing Accounts.

H. A. Smith. *Geo. W. McElhaney. S. G. Perry.

Third Division—On Voluntary Essays.

C. N. Peirce. S. H. Guilford. *E. T. Darby.

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*These go out August, 1891.

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MINUTES OF TRANSACTIONS

OF THE

AMERICAN DENTAL ASSOCIATION,

SESSION OF 1890.

BY GEORGE H. CUSHING, SECRETARY.

FIRST DAY—MORNING SESSION.

The American Dental Association commenced its Thirtieth Annual Session in the Opera House at Excelsior Springs, Mo., on Tuesday, August 5, 1890, at 11 A. M., the President, M. W. Foster, in the chair.

The roll being called, the following were found either to be present or to have forwarded their dues:

ATKINSON, W. H.	41 East Ninth st., New York.
ALLPORT, W. W.	Argyle Building, Chicago, Ill.
AMES, W. B.	70 State st., Chicago, Ill.
*ABBOTT, FRANK	22 West Fortieth st., New York.
BROWN, S. B.	Fort Wayne, Ind.
*BAIRD, W. H.	Burlington, Iowa.
*BOICE, ALONZO	1612 Vine st., Philadelphia, Pa.
*BRACKETT, C. A.	102 Touro st., Newport, R. I.
BUCKLEY, W. H.	Liberty, Mo.
BROPHY, TRUMAN W.	96 State st., Chicago, Ill.
BALDWIN, A. E.	828 West Adams st., Chicago, Ill.
BROWN, E. PARMLY	716 Fifth ave., New York.
BILLINGS, C. A.	Marshalltown, Iowa.
*d*BROWER, E. D.	Le Mars, Iowa.

*Those marked thus were not present but sent their dues.
*d*Those marked thus were delegates but not permanent members.

*Bullock Chas.	265 North ave., Cambridge, Mass.
*Butler, C. R	519 Euclid ave., Cleveland, Ohio.
*Chittenden, C. C.	21 West Main st., Madison, Wis.
Cushing, Geo. H.	96 State st., Chicago, Ill.
Crouse, J. N.	2231 Prairie ave., Chicago, Ill.
*Chaim, M. L.	30 Cooper Institute, New York.
Conrad, Wm.	321 North Grand ave., St. Louis, Mo.
*Curtis, G. L.	11 East Jefferson st., Syracuse, N. Y.
Case, C. S.	Jackson, Mich.
*Colding, Henry S.	105 Jones st., Savannah, Ga.
Crawford, J. Y.	Nashville, Tenn.
Cassidy, J. S.	Covington, Ky.
Chase, Emma Eames Mrs.	2602 Locust st., St. Louis, Mo.
Coston, W. A.	Fort Scott, Kas.
Coulson, D. E.	Galesburg, Ill.
*d*Callahan, A. M.	Topeka, Kas.
*Cleland, James	152 Woodward ave., Detroit, Mich.
*Clifton, W. R.	Waco, Texas.
*Darby, E. T.	1513 Walnut st., Philadelphia, Pa.
*Davenport, I. B.	30 Avenue de l' Opera, Paris, France.
Davis, L. L.	524 West Van Buren st., Chicago, Ill.
*Douglass, B.	Appleton, Wis.
*Dunn, Chas. E.	529 Second st., Louisville, Ky.
Esterly, C. E.	Lawrence, Kas.
*d*Edwards, A. L.	Des Moines, Iowa.
*Farrar, J. N.	1271 Broadway, N. Y., cor. 32d st.
*Freeman, A. W.	112 Clark st., Chicago, Ill.
*Field, Geo. L.	Abstract Building, Detroit, Mich.
*Fillebrown, Thos.	609 Congress st., Portland, Me.
Foster, M. W.	9 West Franklin st., Baltimore, Md.
Fuller, A. H.	2602 Locust st., St. Louis, Mo.
*Freeman, Arthur B.	325 West Madison st., Chicago, Ill.
Floyd, E. A.	Paola, Kas.
*Finley, M. F.	1928 I st., N.-W. Washington, D. C.
*Freeman, S.	1109 Lexington ave., N. Y.
*Gaylord, Edward S.	632 Chapel st., New Haven, Conn.
Griggs, A. C.	Warrensburg, Mo.
Gardiner, F. H.	126 State st., Chicago, Ill.
Gilmer, T. L.	3266 Cottage Grove ave.. Chicago, Ill.
Goddard, C. L.	131 Post st., San Francisco, Cal.
Griswold, W. E.,	Tabor Opera House, Denver, Colo.
*d*Garber, S. A.	Tipton, Iowa.
*Guilford, S. H.	1616 Walnut st , Philadelphia, Pa.
*Gilpin, T H.	Middletown, Del.
*Hacker, T. S.	28½ East Ohio st., Indianapolis, Ind.
*Hayward, T. T.	2017 4th ave., Minneapolis, Minn.
*Hoysradt, G. W.	Ithaca, N. Y.
Harlan, A. W.	70 Dearborn st., Chicago, Ill.

HOFF, N. S.	Ann Arbor, Mich.
HOW, W. STORER,	Chestnut st., cor. 12th, Philadelphia, Pa.
HETRICK, F. O.	Ottawa, Kas.
HUNT, A. O.	Iowa City, Iowa.
HEWITT, C. B.	718 Troost ave., Kansas City, Mo.
HAZEN, E. P.	Fort Madison, Iowa.
HOLLINGSWORTH, J. G.	Platte City, Mo.
HECKLER, J. W.	Kansas City, Mo.
*d*HUGHES, E. E.	Des Moines, Iowa.
*HOLMES, E. S.	103 Ottawa st., Grand Rapids, Mich.
*HAWES, EARL P.	88 Westminster st., Providence, R. I.
JACKSON, H. H.,	317 Jefferson ave., Detroit, Mich.
*JOHNSON, C. N.	Room 112, Opera House, Chicago, Ill.
*JEFFERIS, C. R.	908 King st., Wilmington, Del.
JACK, LOUIS	1533 Locust st., Philadelphia, Pa.
JAMES, T. L.	Fairfield, Iowa.
*JACKSON, V. H.	6 East 126th st., New York.
JOHNSTON, S. E.	Seneca, Kas.
*KNOWLES, SAMUEL E.	S.-E. cor. Post and Stockton sts., San Francisco, Cal.
*KEITH, H. H.	3140 Olive st., St. Louis, Mo.
*KNEPPER, GERMANNUS	Wilson Block, Los Angeles, Cal.
KOCH, C. R. E.	3011 Indiana ave., Chicago, Ill.
*KNAPP, J. ROLLO	102 Canal st., New Orleans, La.
*KINGSBURY, C. A.	1119 Walnut st., Philadelphia, Pa.
*LEVY FRED A.	Orange, N. J.
LOWRY, H. S.	1106 Main st., Kansas City, Mo.
LETORD, J. S.	548 Main st., Kansas City, Mo.
*MORGAN, W. H.	211 North High st., Nashville, Tenn.
*MORGAN, H. W.	211 North High st., Nashville, Tenn.
MENG, JOHN W.	Lexington, Mo.
MARTIN, WM. J.	181 West Madison st., Chicago, Ill.
MARTINDALE, J. H.	Minneapolis, Minn.
MILLER, H. C.	Grand Island, Neb.
MATHEWS, L. M.	Lawrence, Kas.
MONFORT, J. B.	Fairfield, Iowa.
*d*MATTHEWS, R.	Wichita, Kas.
*MOORE, J. HALL	104 North 9th st., Richmond, Va.
*MCMANUS, JAMES	13 Pratt st., Hartford, Conn.
MCCANDLESS, A. W.	118 West 3d st., Davenport, Ia.
*MCELHANEY, G. W.	1147½ Broad st., Columbus, Ga.
*NORTHROP, A. L.	57 West 49th st., New York.
NOBLE, H. B.	600 13th st. cor. F., Washington, D. C.
NICKLES, R. E.	Salina, Kas.
*NEWBY, J. B.	2640 Washington ave., St. Louis, Mo.
*ODELL, F. M.	159 West 34th st., N. Y.
OTTOFY, LOUIS	1228 Milwaukee ave., Chicago, Ill.
*PALMER J. W.	Fitchburg, Mass.

CHICAGO, AUGUST, 1877.

President,	F. H. REHWINKEL	Chillicothe, Ohio.
1st Vice-President,	L. D. SHEPARD	Boston, Mass.
2d Vice-President,	GEO. T. BARKER	Philadelphia, Pa.
Recording Secretary,	M. S. DEAN	Chicago, Ill.
Corresponding Secretary,	M. H. WEBB	Lancaster, Pa.
Treasurer,	W. H. GODDARD	Louisville, Ky.

NIAGARA FALLS, AUGUST, 1878.

President,	H. J. MCKELLOPS	St. Louis, Mo.
1st Vice-President,	L. D. SHEPARD	Boston, Mass.
2d Vice-President,	L. D. CARPENTER	Atlanta, Ga.
Recording Secretary,	GEO. H. CUSHING	Chicago, Ill.
Corresponding Secretary,	A. O. RAWLS	Lexington, Ky.
Treasurer,	W. H. GODDARD	Louisville, Ky.

NIAGARA FALLS, AUGUST, 1879.

President,	L. D. SHEPARD	Boston, Mass.
1st Vice-President,	C. N. PEIRCE	Philadelphia, Pa.
2d Vice-President,	GEO. L. FIELD	Detroit, Mich.
Recording Secretary,	GEO. H. CUSHING	Chicago, Ill.
Corresponding Secretary,	M. H. WEBB	Lancaster, Pa.
Treasurer,	W. H. GODDARD	Louisville, Ky.

BOSTON, AUGUST, 1880.

President,	C. N. PEIRCE	Philadelphia, Pa.
1st Vice-President,	W. C. BARRETT	Buffalo, N. Y.
2d Vice-President,	GEO. J. FRIEDRICHS	New Orleans, La.
Recording Secretary	GEO. H. CUSHING	Chicago, Ill.
Corresponding Secretary,	A. M. DUDLEY	Salem, Mass.
Treasurer,	W. H. GODDARD	Louisville, Ky.

NEW YORK, JULY, 1881.

President,	H. A. SMITH	Cincinnati, Ohio.
1st Vice-President,	W. C. BARRETT	Buffalo, N. Y.
2d Vice-President,	GEO. J. FRIEDRICHS	New Orleans, La.
Recording Secretary,	GEO. H. CUSHING	Chicago, Ill.
Corresponding Secretary,	A. M. DUDLEY	Salem, Mass.
Treasurer,	W. H. GODDARD	Louisville, Ky.

CINCINNATI, AUGUST, 1882.

President,	W. H. GODDARD,	Louisville, Ky.
1st Vice-President,	GEO. J FRIEDRICHS	New Orleans, La.
2d Vice-President,	E. T. DARBY	Philadelphia, Pa.
Recording Secretary,	GEO. H. CUSHING	Chicago, Ill.
Corresponding Secretary,	A. W. HARLAN	Chicago, Ill.
Treasurer,	GEO. W. KEELY	Oxford, Ohio.

NIAGARA FALLS, AUGUST, 1883.

President,	E. T. DARBY	Philadelphia, Pa.
1st Vice-President,	C. S. STOCKTON	Newark, N. J.
2d Vice-President,	T. T. MOORE	Columbia, S. C.
Recording Secrectary,	GEO. H. CUSHING	Chicago, Ill.
Corresponding Secretary,	A. W. HARLAN	Chicago, Ill.
Treasurer,	GEO. W. KEELY	Oxford, Ohio.

SARATOGA SPRINGS, AUGUST, 1884.

President,	J. N. CROUSE	Chicago, Ill.
1st Vice-President,	M. W. FOSTER	Baltimore, Md.
2d Vice-President,	C. F. RICH	Saratoga, N. Y
Recording Secretary,	GEO. H. CUSHING	Chicago, Ill.
Corresponding Secretary,	A. W. HARLAN	Chicago, Ill.
Treasurer,	GEO. W. KEELY	Oxford, Ohio.

MINNEAPOLIS, AUGUST, 1885.

President,	W. C. BARRETT	Buffalo, N. Y.
1st Vice-President,	L. C. INGERSOLL	Keokuk, Iowa.
2d Vice-President,	A. T. SMITH	Minneapolis, Minn.
Recording Secretary,	GEO. H. CUSHING	Chicago, Ill.
Corresponding Secretary,	A. W. HARLAN	Chicago, Ill.
Treasurer,	GEO. W. KEELY	Oxford, Ohio.

NIAGARA FALLS 1886.

President,	W. W. ALLPORT	Chicago, Ill.
1st Vice-President,	GEO. W. MCELHANEY	Columbus, Ga.
2d Vice-President,	S. W. DENNIS	San Francisco, Cal.
Recording Secretary,	GEO. H. CUSHING	Chicago, Ill.
Corresponding Secretary,	A. W. HARLAN	Chicago, Ill.
Treasurer,	GEO. W. KEELY	Oxford, Ohio.

NIAGARA FALLS, 1887.

President,	FRANK ABBOTT	New York City.
1st Vice-President,	CHARLES R. BUTLER	Cleveland, Ohio.
2d Vice-President,	T. SOLLERS WATERS	Baltimore, Md.
Recording Secretary,	GEO. H. CUSHING	Chicago, Ill.
Corresponding Secretary,	FRED. A. LEVY	Orange, N. J.
Treasurer,	GEO. W. KEELY	Oxford, Ohio.

LOUISVILLE, KY., 1888.

President,	C. R. BUTLER	Cleveland, Ohio.
1st Vice-President,	A. W. HARLAN	Chicago, Ill.
2d Vice-President,	SAMUEL A. WHITE	Savannah, Ga.
Recording Secretary,	GEO. H. CUSHING	Chicago, Ill.
Corresponding Secretary,	FRED. A. LEVY	Orange, N. J.
Treasurer,	A. H. FULLER	St. Louis, Mo.

shall add to its membership either one, three, or five more members as it may deem advisable; and when this committee is so completed it shall be clothed with full power to take such action as it in its judgment may deem best for creating an organization for the purpose of holding a dental meeting in Chicago in 1893, which the reputable dentists throughout the world shall be invited to attend, and that any action that this committee may take in the premises shall be final and binding.

After some debate, Dr. Allport moved to lay the motion on the table.

Motion to lay upon the table was not seconded.

Dr. Truman moved to refer the matter to a committee of three. The previous question being called for, was lost.

It having been announced that a committee from the Southern Dental Association were present and had a communication to present on the subject under debate, Dr. Cushing moved that the matter be laid upon the table until the committee from the Southern Dental Association had been heard; immediately after which the subject shall be taken from the table and disposed of. The following communication was then presented:

DR. M. W. FOSTER:

President American Dental Association:

Dear Sir: A committee from the Southern Dental Association are in waiting, and would ask the privilege, at your earliest convenience, of presenting a communication to the American Association. Very respectfully,

L. D. CARPENTER, *Chairman.*

The secretary then read the following resolution, presented by the committee from the Southern Dental Association:

ATLANTA, Ga., July 16, 1890.

At the session of the Southern Dental Association held July 16, 1890, the following preamble and resolutions were passed unanimously, and the president appointed the following committee in accordance therewith: L. D. Carpenter, Atlanta, Ga.; J. Y. Crawford, Nashville, Tenn.; J. Taft, Cincinnati, O.; C. S. Stockton, Newark, N. J., and W. J. Barton, Paris, Tex.

WHEREAS, There is to be a World's Columbian Exposition in Chicago in 1893; and whereas, in consequence of the fact that the choicest products of the world are to be there displayed, it is expected that citizens in large numbers of all civilized countries will be gathered together there for the purpose of seeing these exhibits; and whereas, it is to be presumed that many dentists from foreign countries will visit the United States at that time; and whereas, the time of the exposition will be an opportune occasion for a great meeting of dentists of the world; and whereas, it is believed that a great advance in the science and practice

of dental and oral surgery would result from a meeting of the dentists of the United States with those from foreign countries who might then be visiting this country; and whereas, it is desirable that any meeting then held should be at the instance of the American Dental Association and the Southern Dental Association and organized by a joint committee by them appointed; therefore be it

Resolved, That the president of this association appoint a committee of five, to confer with a like committee that may be appointed at the next meeting of the American Dental Association upon this subject, and that this joint committee have power to fill all vacancies, and shall add to its membership either one, three or five more members as it may deem advisable; and when this committee is so completed, it shall be clothed with full power to take such action as it in its judgment may deem best for creating an organization for the purpose of holding a dental meeting in Chicago in 1893, which the reputable dentists throughout the world shall be invited to attend, and that any action that this committee may take in the premises shall be final and binding.

The subject matter being then taken from the table the motion to refer to a committee of three was voted down.

Dr. Gardiner, with the consent of his second, then withdrew his original motion and offered the following:

Resolved, That the American Dental Association concur in the resolutions presented by the Southern Dental Association, and that the President appoint the committee of five from this body, therein suggested.

Carried.

The Executive Committee offered the programme, subject to such changes as might become necessary, as a report of progress, which was adopted:

On motion of Dr. Baldwin, all members of the Southern Dental Association were invited to take part in our proceedings.

The following letter was then read:

NASHVILLE, August 1, 1890.

TO THE PRESIDENT AND FELLOWS OF THE AMERICAN DENTAL ASSOCIATION:

I send you cordial greetings from my bed of sickness!

Eight weeks of severe illness has not impaired my love of our noble profession. My earnest hope is that your deliberations will still further advance the standard (already high) of dental science.

It is with profound regret that I cannot mingle with old friends and comrades as in former times.

The blessings of Providence permitting, I hope to be with you at future meetings.

Very truly yours,

W. H. MORGAN.

On motion of Dr. Stockton, the following was adopted:

Whereas, We have heard with sorrow of the serious illness of Drs. W. H. Morgan and E. T. Darby, both Ex-Presidents and honored members of this Association; therefore,

Resolved, That we sincerely sympathize with them in their afflictions and express our earnest prayer for their speedy recovery, and that the Secretary telegraph the same to them.

The Credentials Committee made a partial report, which was adopted as a report of progress, and was subsequently completed as follows:

Chicago Dental Society.—Frank H. Gardiner, J. A. Swasey, A. E. Baldwin.

Chicago College of Dental Surgery.—T. W. Brophy.

Colorado State Dental Association —W. E. Griswold.

Connecticut Valley Dental Society.—L. C. Taylor.

Hayden Dental Society of Chicago.—Louis Ottofy.

Illinois State Dental Society.—J. N. Crouse, Louis Ottofy, A. E. Baldwin, D. E. Coulson, W. J. Martin.

Indiana State Dental Association.—W. W. Shryock, S. B. Brown.

Iowa State Dental Society.—E. P. Hazen, C. A. Billings, S. A. Garber, E. D. Brower, J. B. Montfort, E. E. Hughes, Jessie M. Ritchey, S. L. Edwards, T. L. James.

Iowa Eastern Dental Society.—C. A. Billings.

Kansas City Dental College.—A. H. Thompson.

Kansas State Dental Association.—R. E. Nickles, S. E. Johnston, R. A. Wasson, A. M. Callahan, W. H. Shulze, E. A. Floyd, R. Mathews, L. M. Mathews.

Kentucky State Dental Association.—A. Wilkes Smith, B. Oscar Doyle.

Louisville College of Dentistry.—A. Wilkes Smith.

Minnesota State Dental Association.—J. H. Martindale, W. X. Sudduth.

Missouri State Dental Association.—H. S. Lowry, E. E. Shattuck, J. S. Letord, J. G. Hollingsworth, J. W. Heckler.

Nebraska State Dental Society.—H. C. Miller, W. W. Vance.

New Jersey State Dental Association.—C. S. Stockton.

Odontological Society of Chicago.—A. W. Harlan.

Odontological Society of Cincinnati.—J. S. Cassidy.

Odontological Society of Pennsylvania.—C. N. Peirce, Louis Jack.

Ohio College of Dental Surgery.—H. A. Smith.

Pennsylvania College of Dental Surgery.—C. N. Peirce.

San Francisco Dental Association.—C. L. Goddard.

Southwestern Dental Society.—G. T. Carpenter, Theodore Stanley, W. A. Costen.

St. Louis Dental Society.—Emma Eames Chase.

Tennessee Dental Association.—D. R. Stubblefield, J. Y. Crawford.

University of California.—C. L. Goddard.

University of Denver.—P. T. Smith.

University of Iowa, Dental Department.—A. O. Hunt.

University of Minnesota, Dental Department.—W. X. Sudduth.
University of Michigan, Dental Department.—N. S. Hoff.
Vanderbilt University, Dental Department.—D. R. Stubblefield.
Washington City Dental Society.—H. B. Noble.

The following communication from the S. S. White Dental Manufacturing Co. was then read by the secretary. On motion it was ordered received and placed on file:

TO THE PRESIDENT AND MEMBERS OF THE AMERICAN DENTAL ASSOCIATION:

Gentlemen: We solicit your thoughtful attention to, and formal action upon the following statement of facts:

At the last meeting of your body, Dr. Louis Jack read a paper entitled, "The Necessity for Independent Dental Journalism." In the discussion which followed the reading of that paper, Dr. Barrett is officially reported as having said that the American Dental Association "slams the door in the faces of all its journals, and refuses to allow them access to the sources of information," and "deliberately closes up the legitimate channels through which such information must flow." He stigmatized the arrangement under which the transactions of the association have been published as "dirty work" done "by the politicians of the society," and averred that "as long as the society clings to its present position it is unworthy to consider the subject of dental literature."

In so far as these charges relate to your association and its attitude and action, we have nothing to say, but as it takes two parties to make a "dirty" contract, we are naturally averse to resting quietly under such an imputation.

Permit us, therefore, to rehearse briefly the facts which led to the contract between your association and the company charged as guilty with yourselves of "dirty work."

At the meeting of your association held in Boston in 1880, the Publication Committee reported as follows:

"The committee wish to state that the transactions might have been ready for distribution in ninety days from the date of adjournment, had they felt at liberty to proceed at once with the work; but the treasury was empty, and it was not deemed justifiable to commence printing until enough money was collected to insure the payment of the bills. So soon as the proper amount was secured, they proceeded with all the expedition possible, compatible with the proper execution of their task."

As a result of this report of the condition of the treasury, the following resolution was subsequently offered by Drs. Atkinson and Crouse:

"*Resolved*, That the publication Committee be instructed to confer with publishers to secure the best terms for the publication of the transactions of this body, with authority to give such portion of the matter as the publishers may wish, as a part or as a full compensation, and that the Publication Committee have discretionary power to accept or reject any or all offers."

Having been solicited to name the terms on which we would publish the transactions, a proposition was submitted by us as follows:

DR. GEO. H. CUSHING:

Chairman Publication Committee, American Dental Association:

Dear Sir: We offer to publish the transactions of the American Dental Association for 1880 upon the following terms.

One copy for each member of the association, and one hundred copies additional to be furnished to the association without charge.

We are to have the privilege of publishing additional copies for our own use and disposal, if we so desire, and of using all or such of the matter as we may choose for publication in the *Dental Cosmos*, after the issue of the Transactions.

All expense for the transmission of papers, copy and proofs to be borne by us.

All proofs to be sent to the chairman of the Publication Committee for revision, after they have been thoroughly corrected by our proof-readers—two sets of proofs to be sent in every case.

Printing and paper of copies furnished the association not to be inferior to those of the published Transactions of the year 1879.

No advertisements to be placed on the copies furnished the association. If copy is furnished us as fast as needed, commencing October 1, we agree to have the Transactions issued on or before the fifteenth of November.

Very respectfully, TRUSTEES OF SAMUEL S. WHITE.

At the next meeting of the association, held in New York, in 1881, the Publication Committee submitted the following report:

"In accordance with the instructions of the association, they opened correspondence with different publishers regarding the printing of the Transactions; finally accepting the proposition of the trustees of S. S. White.

Three hundred copies of Transactions were furnished the association, of which about 235 copies have been duly distributed as per the treasurer's list, and to the various libraries, universities, journals and honorary members.

Of the character of the work done by the trustees of S. S. White, the volume speaks for itself; but the association cannot know how much it owes to these gentlemen, and particularly to Mr. Hise, who had charge of the publishing department.

Without the very intelligent and diligent services they rendered, you could not have had so fine an edition of Transactions, while your editor and publishers were so widely separated.

The committee feel that the warm thanks of the association are due to the gentlemen above named for the valuable services they have rendered."

The sole object in undertaking the publication of the Transactions by us was to help the association out of its financial straits; and we asked and received no concession which was not granted to all dental journals. The associciation reserved all rights to its papers, and no journal was permitted to publish any paper in full previous to the issue of its Transactions. For two years the Transactions were published under this arrangement; then a single modification was made in the terms by which the *Dental Cosmos* was permitted to publish in advance such papers as it might elect to print in full. And since, the only advantage which it has held over any other journal was the opportunity to publish a paper in full before the appearance of the Transactions. Every journal has always had the privilege of sending its reporter and of publishing reports of the

papers and discussions, the papers being furnished by the secretary for reasonable abstracts, with the single condition that they were not to be printed in full. After publication of the Transactions, they were of course free to all.

This single, simple advantage—permission of first publication—has cost us thousands of dollars; the actual expense of publishing the Proceedings of one year being over seven hundred dollars.

This contract has been faithfully carried out on our part. We have illustrated at large outlay all papers requiring illustration, and have given our best efforts to place the official reports of your transactions in the hands of your secretary at the earliest time possible after the receipt of the material. Nor have we attempted, directly or indirectly, to control the policy of the association, nor to interfere in any way whatever with its affairs. We have, moreover, given a wider circulation through the Dental Cosmos to the proceedings of the society than could have been obtained through any other channel.

We have labored under the impression that we were unselfishly and generously serving the association, and thereby advancing the interests of the profession at large; but if our business relations with your body are to be openly stigmatized without disavowal as a "dirty" arrangement, the sooner such relations are discontinued the better; and we hope that some other method of publication will be found which will be more creditable and more advantageous to all concerned.

Yours respectfully,

THE S. S. WHITE DENTAL MFG. CO.

J. W. WHITE, *President.*

Dr. H. A. Smith offered the following:

Resolved, That this association accepts as historically correct the statements made by The S. S. White Dental Manufacturing Company concerning the publication of our proceedings, and disclaims any sympathy with the charges of partiality or unfairness on their part, or of cause of complaint in this connection against the house referred to, whose arrangement with us for the publication of our transactions we have considered and do still consider to have been generous on its part and of great advantage to this association.

Dr. Sudduth moved to refer the resolution to a committee of three, to ascertain if the facts stated are historically correct.

Carried.

The Publication committee then presented their report as follows:

The Publication Committee would respectfully report, that the Transactions for 1889 were published as usual by the S. S. White Dental Manufacturing Co., and were mailed to all members whose dues were paid, and to the Libraries, Societies and Honorary members who were entitled to them, on Dec. 18, 1889.

Your committee have placed a full file of the Transactions, excepting those for the year 1862, in the Newberry Public Library of Chicago.

There are on hand about thirty copies for 1889.

RECEIPTS AND EXPENDITURES.

Received from Treasurer	$95.00	
" " sale of Transactions	12.00	
		$107.00
Expended, paid bill of Geo. E. Marshall & Co. for membership book to order and three books each of receipts and notices	$20.00	
Expressage and stationary	7.90	
Knight & Leonard for section notices	7.00	
Copying and postage	18.50	
Rehwinkel memorial and expressage	8.40	
S. S. White Dental Manufacturing Co., for binding, mailing and postage	48.86	
Geo. E. Marshall & Co., for two books to order and two draft books	$14.00	
		$124.66
Balance due the Committee	$17.66	

GEO. H. CUSHING, *Chairman.*

Audited and found correct: A. O. HUNT, LOUIS OTTOFY, C. N. PEIRCE. } *Auditing Committee.*

The treasurer then read his report as follows:

EXCELSIOR SPRINGS, Mo., August 5th, 1890.

THE AMERICAN DENTAL ASSOCIATION IN ACCOUNT WITH A. H. FULLER, TREASURER.

By balance August 1st, 1889	$2028.55
Dues received to date	1080.00
Total	$3108.55

DISBURSEMENTS.

George H. Cushing. Bal. due for expense Publication Committee	$ 16.52
" " " Reporter's salary	125.00
" " " Recording Secretary, salary	200.00
A. H. Fuller, Treasurer, salary	100.00
For telegram sent Am. Den. Society of Europe	6.45
T. W. Brophy, freight on 2 boxes and 4 cylinders from Chicago	8.20
J. N. Crouse, for programmes	47.65
" " " " stamps, expressage and paper	38.09
" " " " envelopes	8.75
Supervisor, Saratoga Township, for hall rent	40.00
W. T. Gregg, N. Y., Oxy Calcium Light, Lantern exhibit	33.00
Section II., Express, printing and stationery	4.65
A. H. Fuller, envelopes $1.75, postage $8.75, express $1, painting card $5	16.50
George H. Cushing, chairman publication committee for printing, postage, expenses, etc.	95.00
J. N. Crouse, as per resolution of Dr. Marshall, page 31 Transactions 1889	1000.00
Total	$1739.81
Balance on hand	$1368.74

A. H. FULLER, *Treasurer.*

Audited and found correct August 5, 1890.

A. O. HUNT, LOUIS OTTOFY. } *Auditing Committee.*

President Foster then read his address; Dr. Harlan in the chair;

At the conclusion of which, Dr. Taft moved it be referred to the committee on Voluntary Essays, they to suggest the points for discussion and to refer them to the proper sections. Carried.

The Executive Committee announced that they had filled the vacancies in the committee as follows: Committee on Voluntary Essays, H. A. Smith, C. R. E. Koch and P. T. Smith; in the Committee on Credentials, Louis Ottofy and C. N. Peirce.

The Sections then announced their various places of meeting.

Adjourned till 7:30 P. M.

FIRST DAY—EVENING SESSION.

The Association was called to order at 7:55 P. M., President Foster in the chair.

The minutes of the morning's session were read and approved.

Under miscellaneous business the President announced the committee called for under Dr. Sudduth's motion, W. X. Sudduth, H. A. Smith and Geo. H. Cushing.

The Credentials Committee made a supplemental report, which was adopted.

The President appointed the following as the committee called for by Dr. Gardiner's motion to concur in the resolutions referred to this body by the Southern Dental Association, L. D. Shepard, of Boston; W. W. Walker, of New York; A. O. Hunt, of Iowa; H. B. Noble, of Washington, D. C., and Geo. W. McElhaney, of Georgia.

The Committee on Voluntary Essays submitted the following:

Your Committee on Voluntary Essays beg leave to report that a voluntary essay, entitled, "How to Inaugurate a National Dental Degree," submitted by Dr. R. Ottolengui, has been carefully read by your committee, and after due

consideration we recommend that a portion of this paper be read, as we believe it may profitably be considered by the Association. While not conceding that the statement of existing conditions of dental college education is fully as bad as represented by the author, we believe it essential to allow his presentation of the present status to go before the Association, in order that this body may more clearly understand the scheme for improvement the author has so enthusiastically devolved in his own mind.

H. A. SMITH.
CHARLES R. E. KOCH.

Essays and discussion now being in order, sections V., VI., VII., and I., were called, none of which being ready, section II. was called, and Dr. W. H. Atkinson read a paper entitled, "Education, Nomenclature and Terminology.

Dr. A. H. Tompson, of Topeka, Kansas, read a paper entitled, "Scientific Instruction in Our Colleges."

A paper by Chas. B. Atkinson, of New York, entitled "Education and the Obligations it Involves," was read by the secretary of the section.

He also read a paper entitled, "National Dental Education," by Dr. R. Ottolengui, of New York.

The electric light growing too dim for reading, the regular order was suspended for the transaction of miscellaneous business.

The resignations of Drs. W. P. Dickinson, E. C. Wadsworth, S. G. Stevens, A. H. Brockway and Theo. A. Wadsworth, were accepted.

The following resolution was adopted:

Resolved, That Thursday evening be set apart for the two papers that require a lantern exhibit; one from section IV. and one from section VII.

On motion, the treasurer was ordered to pay all properly authenticated bills.

The Credentials Committee offered a further supplemental report which was adopted.

The Executive Committee reported that they had examined the report of the secretary and the report of the treasurer and had found them correct.

On motion of Dr. Taft, the president appointed the following committee on necrology: J. Taft, W. B. Ames, and Jas. Truman.

The regular order was now resumed, and Dr. Ottofy, secretary of section II., concluded the reading of Dr. Ottolengui's paper.

Association then adjourned to meet at 9 A. M. to-morrow.

SECOND DAY—MORNING SESSION.

The association was called to order at 9:30 A. M.; the president in the chair.

The minutes of last evening's session were read and approved.

Under miscellaneous business, the first vice-president, Dr. Harlan in the chair,

Dr. Sudduth offered the following report:

Your committee to whom was referred the communication of the S. S. White Dental Manufacturing Co. would offer the following resolution as their report:

Resolved, That this association accepts as correct the statements made by the S. S. White Dental Manufacturing Co. in their communication addressed to this body concerning the publication of our proceedings, and disclaims any sympathy with the charges of partiality or unfairness on their part.

We are fully appreciative of the excellent work done by them, but we also feel that the arrangements have been mutually advantageous.

Your committee therefore express the hope that these relations may be continued.

W. X. SUDDUTH,
H. A. SMITH,
GEO. H. CUSHING.

On motion, the report was adopted.

Dr. Smith, chairman of the committee on voluntary essays, to which was referred the President's address, reported that they had assigned the different subjects as follows: Uniformity of State laws, to Sec. II. Appointment of dentists to army and navy, Sec. II. Need of better preliminary preparation for entrance to colleges, Sec. II. Establishment of national dental museum, Sec. VI.

The report was adopted.

The regular order was now called and Sec. II., through the chairman, Dr. Peirce, made its final report, and offered the following resolution, which, after discussion by Drs. Crouse, Sudduth, Stockton and Crawford, was adopted:

This Section having had referred to it the recommendations embraced in the President's address, would ask the adoption of the following:

Resolved, That the American Dental Association now in session appoint a committee of five, whose duty it shall be to report to this body at its next annual meeting, some plan by which the unification of the State dental laws may be accomplished, as recommended in the address of the President, and for the consideration of other subjects therein embraced.

Adopted.

The President appointed as that committee Drs. A. H. Thompson, chairman; J. Y. Crawford, C. N. Peirce, H. B. Noble, and W. W. Walker.

Sec. II. was discussed by Drs. Noble, Peirce, E. Parmly Brown, Baldwin, Stockton, A. Wilkes Smith, Crawford, Story, Allport, Goddard, P. T. Smith, and Truman.

The order was suspended for ten minutes to enable Dr. Crouse to present some statements concerning the Dental Protective Association.

Dr. Crawford moved that a committee of four from the North, South, East and West, be appointed to examine the methods of business of the Dental Protective Association, to report at the next annual meeting.

The president appointed the following:

C. L. Goddard, of San Francisco; J. Y. Crawford, of Nashville; W. W. Walker, of New York, and F. H. Gardiner, of Chicago.

Discussion of Section II. was continued by W. H. Atkinson.

Dr. Rhein moved that discussion of this section be discontinued till all other sections had reported.

Laid on table.

The organization of sections then took place, resulting and completed as follows :

ORGANIZATION OF SECTIONS.

SECTION I. Prosthetic Dentistry, Chemistry and Metallurgy : T. S. Waters, chairman ; W. B. Ames, secretary ; C. S. Case, D. R. Stubblefield, C. L. Goddard, H. H. Keith, J. Rollo Knapp, E. A. Floyd, L. M. Mathews, R. B. Winder, Alonzo Boice, C. R. Jefferis, E. S. Gaylord, M. L. Chaim, S. A. Freeman, A. W. Freeman, J. W. Heckler, M. B. Straight, E. Parmly Brown, John Allen, J. B. Alexander, J. F. Abbott, D. E. Barrows, Ira Brown, John V. Cole, L. E. Custer, C. D. Downs, B. Douglass, Oscar B. Doyle, E. M. S. Fernandez, W. B. Finney, C. B. Gunn, E. L. Graves, W. E. Griswold, F. O. Hetrick, J. G. Hollingsworth, V. H. Jackson, G. Knepper, D. E. Kelley, C. W. Lewis, W. N. Morrison, B. G. Maercklein, Geo. W. Melotte, H. C. Miller, Edgar Palmer, E. J. Perry, C. J. Peterson, W. H. Taggart, C. A. Timme.

SECTION II. Dental Education, Literature and Nomenclature: C. R. E. Koch, chairman ; Louis Ottofy, secretary ; C. N. Peirce, A. H. Thompson, A. E. Baldwin, J. Taft, W. H. Atkinson, A. O. Hunt, D. R. Stubblefield, Wm. H. Shulze, E. Noyes, E. S. Holmes, W. H. Morgan, H. W. Morgan, S. H. Guilford, J. N. Farrar, B. Holly Smith, J. W. Wassall, E. B. Ward, Louis Jack, Jacob L. Williams, C. S. Stockton, W. W. Allport, Fred. A. Levy, Chas. P. Pruyn, Geo. H. Cushing, C. D. Cook, C. C. Chittenden, J. E. Cravens, D. E. Coulson, Chas. E. Graves, E. P. Hazen, Thos. C. Leiter, F. S. Maxwell, L. D. Shepard, E. D. Swain, A. Wilkes Smith, B. Q. Stevens, P. T. Smith, E. E. Shattuck, R. A. Wasson.

SECTION III. Operative Dentistry.—A. E. Baldwin, Chairman; N. S. Hoff, Secretary; J. N. Crouse, H. B. Noble, S. B. Brown, A. W. McCandless, J. Y. Crawford, W. W. Shryock, W. H. Shulze, C. N. Johnson, C. H. Harroun, H. W. Morgan, W. H. Morgan, B. F. Luckey, J. N. Farrar, Henry Barnes, J. Rollo Knapp, T. H. Gilpin, A. N. Priest, E. T. Darby, Thos. Fillebrown, W. A. Coston, E. A. Floyd, L. M. Mathews, W. H. Fundenburg, G. W. Hoysradt, Louis Jack, S. E. Johnston, R. E. Nickles, W. E. Page, J. W. Meng, W. F. Fundenburg, Alonzo Boice, Earl P. Hawes, C. I. Keely, H. H. Jackson, S. B. Palmer, M. F. Finley, S. C. G. Watkins, A. H. Fuller, Wm. Conrad, C. S. Stockton, S. G. Perry, R. F. Ludwig, C. R. Butler, W. H. Buckley, J. S. Letord, M. B. Straight, C. E. Esterly, C. A. Kingsbury, Jas. McManus, S. Freeman, M. L. S. Buckner, J. Adams Bishop, E. Parmly Brown, Eugene H. Smith, E. H. Allen, J. B. Alexander, W. H. Baird, C. Bullock, Chas. C. Barker, A. E. Brown, Jos. Bauer, A. G. Bouton, C. A. Billings, W. H. Colgrove, Jas. Cleland, D. M. Clapp, H. S. Colding, C. E. Dunn, W. H. Dwinelle, Geo. L. Field, P. G. C. Hunt, O. N. Heise, T. S. Hacker, Walter W. Hertz, C. B. Hewitt, E. P. Keech, J. D. Lanier, H. J. McKellops, C. H. Osgood, Jas. G. Palmer, J. W. Palmer, L. D. Shepard, E. D. Swain, G. S. Salomon, W. C. Stewart, A. H. Sibley, A. R. Starr, M. E. Smith, J. H. Smith, G. R. Thomas, Jas. I. Taylor, W. H. Taggart, W. W. Vance.

SECTION IV. Histology and Microscopy.—W. X. Sudduth, Chairman; I. P. Wilson, Secretary; W. H. Atkinson, L. L. Davis, Theodore Stanley, T. L. James, L. C. Ingersoll, Frank Abbott, D. C. Bacon, Henry Cowie, F. Y. Clark, M. H. Daily, A. E. Griggs, Saml. E. Knowles, Jos. Lathrop.

SECTION V.—Materia Medica and Therapeutics.—A. W. Harlan, chairman; James Truman, secretary; F. H. Gardiner, J. A. Swasey, W. J. Martin, G. W. McElhaney, C. A. Brackett, W. W. Walker, Wilbur F. Litch, Jessie M. Ritchie, J. S. Cassidy, T. T. Hayward, George H. Cushing, Emma E. Chase, M. W. Foster, H. S. Lowry, D. W. McQuillen, A. L. Northrop, James B. Newby, E. D. Nickson, J. D. Reid. F. R. Ross, A. Wilkes Smith, W. H. Whitslar, F. S. Whitslar, J. W. Palmer.

SECTION VI.—Physiology and Etiology—H. A. Smith, chairman; W. S. How, secretary; J. D. Patterson, A. H. Thompson, W. X. Sudduth, J. J. R. Patrick, Louis Ottofy, D. R. Stubblefield, J. W. Wassall, George F. Waters, F. M. Odell, W. P. Horton, C. B. Rohland, W. C. Barrett, E. A. Bogue, I. B. Davenport, A. M. Dudley, George J. Friedrichs, Thomas T. Moore, Francis Peabody, J. W. Rhone, F. A. Remington, E. S. Talbot, M. V. Toledo, W. E. Tucker, Samuel A. White, J. C. Walton, Thomas E. Weeks, W. C. Wardlaw.

SECTION VII.—Anatomy, Pathology and Surgery—T. W. Brophy, chairman; M. L. Rhein, secretary; I. P. Wilson, F. H. Gardiner, N. J. Roberts, M. G. Jenison, Frank Abbott, E. B. Ward, T. L. Gilmer, Jacob L. Williams, Arthur B. Freeman, G. L. Curtis, F. J. S. Gorgas, V. H. Jackson, J. S. Marshall, Robert Maercklein, J. H. Martindale, W. C. Wendel, Joseph R. C. Ward.

Adjourned till 7:30 P. M.

SECOND DAY—EVENING SESSION.

The Association was called to order at 8:30, the President in the Chair.

The minutes of the morning session were read and approved.

Under miscellaneous business, the following communication from the National Association of Dental Examiners was read, and referred to the following committee: Drs. Patterson, Atkinson and Goddard.

EXCELSIOR SPRINGS, MO., Aug. 6, 1890.

TO THE AMERICAN DENTAL ASSOCIATION:—The National Association of Boards of Dental Examiners, deem it fit and important to call the attention of

the American Dental Association to certain facts that are of interest to, and ought to elicit the attention of every dentist in the country.

Within the last few months the validity of the law regulating the practice in the State of N. H., has been called in question, and legal proceedings have been instituted, with the view of testing its validity, or constitutionality. The result of this litigation has been that in the court in which the case was first tried, it was decided that it was unconstitutional and void. An appeal was taken, as we have been informed, to the Supreme Court of the State.

The result of which was that the decision of the lower Court was affirmed, and from this an appeal has been taken to the Supreme Court of the United States, where the case now rests, with an uncertainty as to the decision that may be given by this Court.

We have been informed that the effort to sustain the law before both the Courts that have passed upon it was feeble and totally inadequate. The Association of Boards of Examiners desire to call the attention of your body to this matter, and would ask your careful consideration of the subject, and such action as you may deem requisite to secure the success of right and justice.

We regard it as important that a suitable defence be made before the Supreme Court, and we rely upon your body to take such action as will secure this result.

T. S. WATERS, D. D. S., *President.*
J. H. MARTINDALE, *Secretary* (*pro. tem.*)

The Committee on Credentials made a further supplemental report which was adopted.

Dr. Truman offered the following which was adopted:

Resolved, That the lantern exhibits proposed for Thursday evening be limited to one hour, the time to be divided between the gentlemen named as exhibitors.

Dr. Sudduth stated that under this resolution, as the time was so limited for the lantern exhibit, he would give his time to Dr. Hunt.

A letter, of regret at his unavoidable absence from the meeting, from Dr. W. H. Dwinelle, was read.

Dr. Hunt moved that the congratulations of the association be cabled to the congress at Berlin. Carried.

The completion of the committee on the organization for the dental meeting to be held in Chicago in 1893, was announced by its chairman as follows: W. W. Walker, of New York, chairman; L. D. Shepard, of Boston; A. O. Hunt, of Iowa; H. B. Noble, of Washington, D. C.; Geo. W. McElhaney, of Columbus, Georgia;

L. D. Carpenter, Atlanta, Georgia; J. Y. Crawford, Nashville, Tenn.; J. Taft, Cincinuati; C. S. Stockton, Newark, N. J.; W. J. Barton, Paris, Texas; J. C. Storey, Dallas, Texas; M. W. Foster, Baltimore; A. W. Harlan, Chicago; J. S. Marshall, Chicago, and H. J. McKellops, St. Louis.

Section II was now called.

Dr. Patterson offered the following:

Resolved, That the societies sending delegates to the American Dental Association be requested to instruct their delegates to select one of their number who shall compile a report upon all original work of the association and other interesting facts which would be of use to the profession.

Discussion was continued by Dr. H. A. Smith.

Section II. was then passed.

Section III. being called, Dr. Baldwin read a brief abstract of two papers—one by Dr. C. B. Atkinson, of New York, and one by Dr. J. L. Williams, of Boston.

Dr. N. S. Hoff, secretary, read the report of the section. Dr. Peirce made some remarks on experiments with per-oxide of hydrogen.

Discussed by Drs. Brophy, Rhein, Peirce, Harlan, Ames, Stubblefield, Conrad, Atkinson, Ottofy, Storey, E. P. Brown, Swazey, P. T. Smith, Goddard, Crouse and Baldwin.

On motion the section was passed.

Adjourned till 9 A. M. to-morrow.

THIRD DAY—MORNING SESSION.

The association was called to order at 9:30 A. M., the president in the chair.

The minutes of last evening's session were read and approved.

Under miscellaneous business, Dr. Crouse moved that the special order for this evening at 7:30 be the selection of the place for next meeting, and the election of officers. Carried.

The following telegram from E. T. Darby, was read:

Your tender words of sympathy are gratefully received. I regret that I cannot be with you, but it is a long road that has no turning, and I will be there next time. EDWIN T. DARBY.

The credentials committee made a further report of progress, which was adopted.

Section IV. was then called, and Dr. Sudduth made a brief verbal report.

On motion, a reconsideration of Dr. Truman's motion to limit time of lantern exhibits, was ordered.

The motion was discussed by Drs. Truman, Patrick and Rhein.

Dr. Truman's motion then being put, was lost.

On motion, it was resolved that the two gentlemen proposing to give the lantern exhibit this evening, be allowed all the time they want.

Section IV. not being ready, Section V. was called, and a paper entitled, "Synthetic Carbolic Acid," was read by the chairman, Dr. Harlan.

There being no discussion offered, Section VI. was called and Dr. H. A. Smith, the chairman, read the report. He was followed by Dr. Patrick, who explained his plan for the examination of crania.

Dr. W. Storer Howe read a paper entitled, "The Hillischer Dental Notation with Indices." Subjects were discussed by Drs. Ottofy, A. H. Thompson, H. A. Smith and P. T. Smith.

Dr. Ottofy offered the following resolution:

Resolved, That the committee in charge of the dental meeting to be held in Chicago in 1893, be requested to suggest to the dental profession in all countries, o be prepared to present at that meeting, tables, suggestions and schemes relating to dental notation, in order if possible, to adopt an international system.

Carried.

Section VI. was passed.

Section VII. being called its report was read by Dr. Rhein, Secretary of the Section.

Dr. Rhein then read a paper by Arthur C. Hugenschmidt, entitled, "The occasional origin of true alveolar abscess from teeth with living pulps." He then read a paper by himself, on "Amputation of roots."

Under miscellaneous business, The Committee on Necrology made a report on the death of Homer Judd, M. D., D. D. S., a former President of this Association. The report was adopted by a rising vote, and will be found on the memorial page.

The following preample and petition were then adopted and ordered to be signed by the President and Secretary and to be presented to Congress through Dr. H. B. Noble, of Washington, D. C.

To the Honorable, the United States Senate and House of Representatives in Congress assembled:—Your petitioners, the American Dental Association, a delegated body (composed of delegates from the State Dental Societies and Dental Colleges of the United States) in annual session at Excelsior Springs, Mo,, respectfully represent as follows: Whereas, this Association is informed that a bill to regulate the practice of dentistry in the District of Columbia, is now pending in the Congress of the United States, and awaits formal action thereon: Therefore, we the American Dental Association respectfully petition your Honorable Bodies, that early and favorable consideration be given to said bill to regulate the practice of dentistry in the District of Columbia, and your petitioners will ever pray.

Adjourned till 7:30 p. m.

THIRD DAY—EVENING SESSION.

The Association was called to order at 8 p. m., President Foster in the chair.

The minutes of the morning session were read and approved.

The special order being, first, to select place of meeting the following was adopted:

Resolved, That the place of holding the next meetiug of this association be left to the Committee of Arrangements, (being the first division of the Executive Committee).

The selection of the place of next meeting being thus disposed of, the next matter in the special order was proceeded with—which was the election of officers.

On motion, it was ordered that the first ballots should be informal or nominating ballots.

On the first ballot for President there were seventy-one votes cast—thirty-six being necessary to a choice. Of these Dr. A. W. Harlan received sixty, Dr. A. O. Hunt, eight, scattering three.

The informal ballot was then made a formal one.

The officers chosen were :

President—A. W. Harlan, Chicago.
First Vice-President—J. D. Patterson, Kansas City.
Second Vice-President—H. B. Noble, Washington, D. C.
Recording Secretary—Geo. H. Cushing, Chicago.
Corresponding Secretary—Fred A. Levy, Orange, N. J.
Treasurer—A. H. Fuller, St. Louis, Mo.
Executive Committee—C. N. Peirce, L. D. Shepard, H. A. Smith.

The installation of officers was then proceeded with.

Drs. Walker and Gardiner were appointed by President Foster to conduct the newly elected President to the chair.

Dr. Harlan being introduced by the retiring president, thanked the association briefly and in well-chosen words for the honor conferred.

The regular order was suspended and the following resolution was adopted.

Resolved, That in selecting Excelsior Springs, Mo., as the place of holding our thirtieth annual meeting, this Association has been particularly fortunate. Whether we regard the beauties of the surroundings, the variety of its health-giving waters, the excellence of the hotel or the courteous, liberal and accommodating spirit of the company's management, we can especially recommend Excelsior Springs, Mo., as a desirable place for holding literary and scientific conventions and as possessing unusual advantages as a health and pleasure resort.

Dr. Sudduth requested that, owing to the lateness of the hour, Dr. Hunt be allowed to occupy the whole of the time set apart for lantern displays.

Dr. Hunt then gave his lecture and exhibit, at the close of which Dr. Sudduth presented his lecture and exhibit, at the conclusion of which the association adjourned to meet at 9 A. M. tomorrow.

FOURTH DAY—MORNING SESSION.

The association was called to order at 10:30 A. M., President Harlan in the chair.

The minutes of last evening's session were read and approved.

The chair appointed Drs. Thompson and Waters to conduct to the platform the newly-elected vice-presidents, who were introduced to the association by President Harlan.

Under miscellaneous business, Drs. Crawford and Jack offered the following resolution:

Be it Resolved, That this association create a business committee of one member from each State represented, who shall select all officers of the association and name the place of meeting, submitting the same for ratification by the association.

The chair ruled the motion out of order, and that the matter could only be reached by an amendment to the constitution.

Dr. W. W. Walker offered the following, which was adopted:

Resolved, That a vote of thanks be and is hereby tendered our retiring president, Dr. M. W. Foster, for the courteous and pleasing manner in which he has presided at this meeting.

Dr. Sudduth offered the following which was adopted:

Resolved, That a committee of five be appointed to devise a system of business management which shall relieve the association from its general business, and report the same at the next annual meeting.

The president subsequently appointed as that committee, W. X. Sudduth, A. E. Baldwin, D. R. Stubblefield, M. L. Rhein and P. T. Smith.

Dr. Peirce moved a reconsideration of the vote taken yesterday adopting the report of the committee to whom was referred the resolutions relating to the communication of the S. S. White Dental Manufacturing company.

The reconsideration was ordered.

Dr. Crouse moved that all of the resolution offered by the committee be striken out, except the first sentence. Dr. Walker moved to amend by substituting the original resolutions offered by Dr. H. A. Smith.

Dr. Crouse accepted this as his original motion. The question was then put, and the original resolutions were adopted.

The committee to whom was referred the communication from the National Association of Dental Examiners, offered the following report :

Your committee recommend that a committee of five be appointed to inquire into the nature of the case before the Supreme Court of New Hampshire, and if after investigation they should believe it essential or desirable that the case be properly defended, they be given power to engage counsel or associate counsel to assist in the proper prosecution of the case before the Supreme Court ; and that this committee be authorized in their discretion, to draw on the Treasurer of this association for an amount not to exceed five hundred dollars.

The report was adopted and the following committee was appointed :

L. D. Shepard. Thos. Fillebrown, T. S. Waters, Geo. H. Cushing, J. H. Martindale.

The following was adopted :

Resolved, That the executive committee be and they hereby are authorized if, in their judgment it seems desirable, to issue a circular to the dental societies and the entire dental profession of the country, at such time as may be deemed most advisable, to the end that the membership of the various local and State societies may be increased and that the usefulness of this association may be advanced and the relations between it and the local societies be made more intimate.

Dr. Goddard having resigned from the committee to investigate the methods of the Dental Protective Association, Dr. Crouse asked that the President be authorized to appoint some one to fill the vacancy, the appointment to be made at any time during the coming year.

It was so ordered.

The following, offered by Dr. T. S. Waters, was adopted:

Resolved, That a vote of thanks of this Association be and hereby is extended to the local committee of arrangements for their efforts in providing for our comfort and entertainment.

The President appointed on the Publication Committee E. T. Darby and E. Noyes.

On motion, the sum of fifteen dollars was appropriated for the janitor.

Section I. was then called, and a brief report was presented by the Secretary Dr. Ames. Dr. Case then read his paper, entitled "A System for Constructing Porcelain Front Crowns." He was followed by Dr. E. P. Brown, after which Dr. D. R. Stubblefield read a paper, entitled "Amalgamation and Dental Amalgams."

On motion, Section I. was passed.

The various reports of the Credentials Committee were then adopted as a whole.

Dr. Truman was authorized to amend the memorial to Dr. Judd.

The following was adopted:

Resolved, That the thanks of this Association be and are hereby tendered to the Excelsior Springs Co. for the reduced rates given our members, and particularly for the free use of the opera house and for the very many courtesies and attentions extended to us, which have tended largely to make our stay at Excelsior Springs so pleasant.

The Auditing Committee then presented their report, as follows:

The Auditing Committee offer the following as their final report, having audited the following bills and found them correct:

J. N. Crouse, Chairman Executive Committee	$ 94.88
On account of Section II	4.96
On account of Section IV	15.70
Telegrams and cablegram	6.25
Secretary's salary	200.00
Stenographer	125.00
Publication Committee (balance)	17.66
Treasurer's salary	100.00
Janitor's fee	15.00
	$579.45

Respectfully submitted.

A. O. HUNT,
LOUIS OTTOFY,
Auditing Committee.

The following amendment to the constitution was offered by Dr. Cushing:

To amend by striking out the entire Section 2, Article IV., of the Constitution.

The minutes were then read and adopted, and, on motion, the Association adjourned, to meet on the first Tuesday in August, 1891, at such place as the Executive Committee shall decide.

GEO. H. CUSHING,
Recording Secretary.

IN MEMORIAM.

HOMER JUDD, M. D., D. D. S.

This association is again called upon to mourn the loss of one of its earliest members in the death of Homer Judd, of St. Louis.

The departure of such a man from the ranks of any calling, would be a serious and almost irreparable loss ; but in the higher interests of the dental profession it is one that merits special and peculiar remembrance at the hands of his colleagues in this body.

Homer Judd was born in Berkshire County, Mass. He graduated in medicine from the Berkshire Medical College, of Pittsfield, Mass. He studied dentistry with Dr. Cone, of Maryland, and commenced its practice in Ravenna, Ohio.

In 1849 he crossed the plains to California as surgeon of the train, and practiced medicine and dentistry in Santa Fe for a short time, but removed to Warsaw, Illinois, in the fall of 1850. He continued in the practice of medicine some six or seven years, being associated with Dr. Charles Coolidge. He finally transferred this interest to his associate, and devoted himself to the practice of dentistry.

He removed to St. Louis in 1861, and practiced there until the breaking out of the Civil War, when he was appointed Contract Surgeon, and was subsequently commissioned as full surgeon in the 34th Missouri regiment of the United States Army.

At the close of the war he returned to St. Louis and resumed the practice of dentistry.

He was one of the leading spirits in the organization of the Missouri State Dental Association and the Missouri Dental College, organized in 1866, of which he was Dean for the first eight years of its existence. This was the first dental college to be so associated with a medical school, that its students were taught the medical branches by medical professors in common with the medical students, receiving the same lectures and passing the same examination.

He was president of the American Dental Association in 1870, and established the *Missouri Dental Journal* in 1869, and filled the position of editor for seven years.

His health failed about ten years since, obliging him to limit his practice. His death took place the 20th of May, 1890, after a prolonged illness, at the age of 71.

Dr. Homer Judd was recognized as a man thoroughly well grounded in scientific work. His broad scholastic mind appeared to be able to grapple with the intricacies of all difficult subjects, and with an original force that enabled him to be ever ready to present them to his colleagues with a logical and convincing power that was almost irresistible. His grasp of subjects, superadded to thorough educational methods, made him a recognized authority in past years. His power as a speaker held an audience, not so much by an eloquent phrasing of words, as in the evidence in every sentence of the master mind.

He loved, lived in and worked for his profession; and as long as health lasted, he was in season and out of season the leading spirit in the Western World of dental science. The excessive labor told on an apparently strong physique, and for many years those who knew Homer Judd in his days of power, had but a memory of the overpowering force that guided the feeble profession of former years to the great triumphs of the present.

The fathers are fast passing away. The rough roads over which they traveled will exist scarcely as a trace on the tablets of a world's life. Let us honor and embalm in memory their work as the most valuable treasure that could have been left us. Let us inscribe on our records their deeds; but in the deeper recesses of our souls let us treasure their influence so that such men may be developed in our ranks who will lead us on to still higher work and more perfect results.

Resolved, that the American Dental Association, send to the family and local association, of which he was a member, this expression of our sympathy with them and in sorrow at this great loss. We can assure them that the foundation he helped to lay will show a future superstructure worthy of the age and the profession, and on which the name of HOMER JUDD will be inscribed as one who, while strength lasted, labored that his profession might live.

ANNUAL ADDRESS.

By M. W. FOSTER, President.

Mr. President, and Gentlemen of the American Dental Association :

We are again convened for the purpose of correcting our past errors, for accepting or rejecting new theories presented, for the dissemination of knowledge, for the benefit of our profession, the public and ourselves.

If in this address I may be allowed to cull from the addresses of our predecessors the brightest thoughts, the strongest passages and recommendations contained therein, it would be better than one man's essay—it would be the concensus of the thoughts and experiences of the many. If I make such selections it will be because the language used and thoughts expressed are better than my own.

The importance of the decision of the present meeting on the many subjects to be presented to it is patent. Owing to the great diversity of opinion existing, it should be our aim to proceed cautiously and with calmness.

Among the many subjects to be presented, it has occurred to me that it would be well for this association to formulate a plan of action in reference to making our State dental laws uniform. I would therefore suggest that this body take into serious consideration the advisability of a uniform set of laws regulating the practice of dentistry in all the States. It is perfectly obvious that we are dealing here with a subject of much importance, and upon which a great diversity of opinion exists. The rights and best interests of the public, our profession, the colleges and the newly-graduated student, are all involved. The public welfare, as well as the interests of our profession, demands such a protection as will eventually destroy ignorant charlatanry and free the people from malpractice and indifferent treatment. We are all aware of this. We are all in favor of this, and the colleges and our young gradu-

ates alike demand such protection. We must admit that our colleges and associations have made dentistry what it is to-day. As in the past so in the future, we must look to those institutions as our best auxiliaries to aid and push forward the progressive work before us.

From a hasty examination and rough analysis of our State statutes, we find that our laws regulating the practice of dentistry in the different States are by no means uniform in their requirements. This is not as it ought to be, and if continued will bring on a conflict between the associations of the several States, which will weaken, if not entirely destroy our national existence as a dental profession.

1. We have laws which demand that both graduates and non-graduates shall be examined by State Boards before admission to practice.

2. We have laws recognizing the diplomas of reputable schools. These permit the holder to practice to the exclusion of all others desiring this privilege.

3. We have laws demanding examinations, but allowing this favor to graduates only.

4. We have laws demanding examinations of dentists, whether graduates or not, with exceptional clauses in favor of the medical degree.

In regard to the first mentioned, that is, laws which examine all alike, whether graduate or not, it would seem at first glance more or less without serious objection. It seems fair to judge an applicant for the privilege of practice by what he knows. But is it fair to place a man who has had no college training on the same platform with one who has enjoyed, at much expense of time and money, this advantage? No medical board that I know of permits this, and if these laws were universally adopted, would it not seriously affect the interests of our colleges, and what would those members of our profession, who have so earnestly advocated the extension of college preparation and training have to say to this, particularly when the colleges, in obedience to their demand and suggestions, have already lengthened their time of preparation from one to three sessions?

Let us look for a moment practically at the working of such a law.

I know that in one of our States, a would-be student of dentistry was advised, as his means were limited, that it would be much better for him to prepare himself at home and go before the Board of Examiners, and thereby save himself much in time and money; that at last if he should go to college and graduate, he would be subjected to the same ordeal. This looks to me like progressing backwards.

In another State the laws of the State Dental Association require that members shall take as pupils to prepare them for college, only those who will remain under their preceptorship two years. This added to the three years required by the colleges would aggregate five years of preparation prior to admission to practice. Under such circumtances do you not believe that the average man would decide to prepare himself at home and let the colleges go? These State laws make no discrimination in regard to previous preparation. If the applicant is twenty-one years of age and can pass his examination, he is permitted to practice.

Again, does not this forced examination of our college graduates show to the whole world an implied distrust and want of confidence in our own schools? Even foreign countries recognize some of our college degrees. Under the laws above quoted none are recognized. Is this not a national degradation? And is it not calculated in every way to injure and destroy our own institutions?

2nd. We have laws which recognize the diploma of all reputable schools and allow only such the privilege of practice: these rid of all examinations.

It seems to us that laws like these evidently take the ground that a college training is imperatively necessary to a practitioner, and forbid all other consideration. They do not suppose it even possible that a practitioner can be qualified for practice in the office of a preceptor.

3d. Laws which demand examinations of all graduates, but exclude all others from this privilege.

These laws like the last quoted, concede too that the graduate alone is competent and fit to practice. In this way they aid and encourage the colleges, but they throw a wet blanket on them by publishing to the world that we have not a single college in the United States like Cæsar's wife, above suspicion; no dental diploma which can be trusted and relied on; thereby destroying the

reputation, the prestige and the value of every dental degree in our country.

It does seem proper that the student who has spent so much time and money in procuring his degree should have some protection and exemption from the torture of further examinations. Under these laws there is no respite or relief for him; no matter where he settles, this ordeal awaits him. If he passes his examination in one State, and for reason emigrates to another, the same ordeal of torture is inflicted. I understand perfectly that the response from those favoring these laws, in reply to what I have said, will be, that if the college graduate is not tested by such examinations, the *colleges* would be under no restraint, would cease, possibly, to be so exacting in their requirements, and make, in a great many instances, improper graduations. There is much reason in this. But is a State Board examination any more immaculate in its decisions than are the faculties? Is the State Board less human? Is it more competent? Is it always appointed because of its competency and integrity?

And is there not some way by which this matter can be disposed of alike just to all concerned and interested ?

I respectfully urge that this matter be discussed and carefully considered. We ought from the general intelligence of this association to have a plan suggested and adopted that will insure to the public, the profession, the colleges and their graduates justice and reasonable satisfaction, we can then announce to the world that our college degrees, both at home and abroad, deserve the confidence of all.

Further suppose the State Boards in each respective State where a dental college or colleges exist be required with their faculties to conjointly examine thoroughly, both practically and theoretically, all candidates for graduation, and when a student has been subjected to such examination and found worthy and deserving, let the diploma be signed by the president or secretary of the board, together with the faculty, and then let such diploma be accepted in every State of the country. Would there be any reason for one State Board rejecting the work of another? The public and our profession, through its selection of the members of such boards, ought to be satisfied. The colleges would, I think, rejoice in thus being relieved of the responsibility and unpleasant duty of turning down incompetent men, the students would be fairly and thoroughly

examined, and I believe would be satisfied. They do not so much dislike examinations, as they do the repetition of them. Dr. Riggs used to say dentists were like bumble-bees—always biggest when first hatched—and they feel a sense of mortification to be obliged after graduation to submit to an appearance before a State Board of Examiners.

If this association in its wisdom and sense of justice to all, will properly consider these questions, aided, as no doubt it will be, by the National Association of Dental Examiners, I feel confident that we will in time have uniform, acceptable and proper laws on this subject.

I also suggest for your consideration the propriety at this time of petitioning Congress to appoint from our profession to the army and navy of the United States, with suitable rank and pay, a dentist wherever such services are needed.

Congress at this time appears to be in favor of building such a navy as will properly represent our great country. Does any gentleman present think in these progressive days that a ship with her crew, going perhaps on a long cruise is efficiently manned and officered without a representative from our profession on board? Is it not inhumanity to man to send a ship's crew off in such a condition, where nothing is left to the poor unfortunates but to be turned over to the tender mercies of the surgeon, while all he knows of dentistry is the extraction of teeth; and where no one in case of a fractured jaw is capable of applying an interdental splint to relieve the sufferer? We think at this time especially, that the public would enthusiastically endorse and approve such action on the part of Congress. I need not dwell on this subject. Every one of you recognizes the necessity for action in this matter, and the times are we think, ripe for it. Of course in this, as in any effort to effect uniform legislation in the States regarding the practice of dentistry, we should invite the aid and co-operation of the Southern Dental Association and all the State societies.

I suggest also for your consideration the propriety of endorsing and recommending to the proper authorities the use of models taken from impressions of the mouth in the identification of criminals. I think this would be perhaps a very reliable means of identification and these models might furnish a valuable source of study to the ethnologist and physiognomist. In Paris I am told they take impressions of the thumbs and have found this quite a useful means

of identification. You are well aware that but for a set of artificial dentures the remains of the murdered Dr. Parkman could not have been identified. You may also be informed that in one of the most notable murder cases on record (in which an attempt was made to defraud the insurance companies out of a large amount of money) the identification of the remains was by the teeth. A skull was presented in court representing it to be the skull of the missing man who was supposed dead, but who at that time was still alive. It was proved that the supposed deceased had an excellent set of teeth; the skull showed the loss of the anterior teeth and absorption of the sockets. Complications arose making it necessary for those in the plot to murder the man to escape imprisonment themselves. This was accomplished, and having the experience of the former trial in view, an effort was made to knock out the anterior teeth, which was partially successful; the roots and portions remaining showed that it had been of recent occurrence; this with the remaining teeth, were the positive means of the identification of the decomposed body.

I also most earnestly recommend for your consideration and action the establishment of a head quarters, dental museum and library of this association in the capital of our country. There our archives could be kept safely. Such a museum and library would grow very rapidly, and in time become very valuable and redound much to our credit.

We could, by the election and appointment of one of our members resident in Washington, have always at head quarters a permanent officer, who would not only take care of and arrange such museum and library, but who would represent us to foreigners. Our other officers are constantly changing, as are our places of meeting, and a person in a foreign land desiring correspondence with this body, would always know where and to whom to address his communications. I feel confident that the government, if properly approached, would willingly aid in this work—probably furnishing apartments in the Smithsonian Institute. The medical department could give us great assistance, and we would soon have, at little expense to us, something of which we might all feel proud. Probably too, after a short time, the government would offer us through this channel, great advantages in the study of ethnology and microscopy. There are a large number of possibilities depending on this movement. Such an enterprise energeti-

cally carried out would do much to aid us in having members of our profession properly honored by appointments to the army and navy. It would serve to convince congressmen that there was more in dentistry than perhaps they had before imagined or dreamed of. There are a large number of possibilities depending on this movement, and I would advise the appointment of a committee to examine into the probable value and success of such an undertaking, and if favorably considered, to report at our next meeting a plan for carrying the same into effect.

Of course we cannot expect to accomplish in a short time all that may accrue in the future. The question of preparatory dental education has been discussed in our associations, both orally and in writing, by leading men in our profession, and yet it is not solved as to the better method. There are many in the profession who advocate a higher education than that usually required of the applicant for admission to our schools. This prevents some men of natural capacity from becoming members of our profession. There are many who consider a good English education sufficient. The colleges have agreed to an increase in the length of the sessions and preliminary examinations, and have endeavored to meet a demand for the more thorough preparation of students before granting a diploma. This course was adopted by them because this association recommended it, as in its judgment necessary.

Does this increase of time bring about the desired reform? Are not some men by educational advantages and manual dexterity more competent or better fitted to practice our profession than others with less qualifications? Is there not a great truth in the language of Professor Huxley, "Handicap by time one man to the capacity of another." ? The more liberal the general education, the broader and more liberal are the views of the possessor; and from this standpoint such a one might reflect more credit on our profession than one of less accomplishments. The natural endowments and aptitude of the less educated man in a final examination would prove that other qualities fit him also for our profession. From this standpoint a dental education commences when the person commences the study of dentistry, whether it be in the office of a preceptor or in some reputable school. This general education either qualifies him for this, or it does not. This is plain, I think. Then is it not a question of *qualification* after all, whether it be one, or five years, or original capacity?

The thirtieth annual meeting of this Association gives renewed assurance to the public and to the profession that as in the past, so in the future, it will be ever watchful to guard with jealous care the best interests of both. By its suggestions and adopted resolutions it has exercised an influence that is far reaching and beneficial in the highest degree. It has been largely instrumental in giving and encouraging a higher standard of dental literature. It has in its membership men who have earnestly and faithfully given their best energies for the promulgation of the broader principles which underlie our profession, the recognition of which has elevated it in public esteem and ranked it, as the talent and ability displayed deserved to rank it, among the most honored in the public service.

Many bright lights have been called from labor to reward. They have left with us their spirit and their record. Let us emulate their example and demand from ourselves such earnest work and dignity of character as will command from an intelligent public that further recognition which our profession so justly merits. Here is no room for selfish ambition or personal aggrandizement or self seeking. He that would be chief among you, as the All Wise once said to His disciples, "Let him be as he that doth serve." To rank dental science among the benefactions of mankind should be our absorbing desire.

Accord me, gentlemen, your forbearance and assistance in the discharge of my official duties to this Association.

SECTION II.

Dental Education, Literature and Nomenclature.

Report By C. N. PEIRCE, Chairman of the Section.

The Section on Dental Education, Literature and Nomenclature begs leave to offer the following as its annual report:

Since the formation of this association, in 1859, the profession has maintained a steady growth in the subjects embraced in section *two*, and especially has the action been noticeable on matters pertaining to education.

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The number of dental colleges at the time of the last annual report was thirty-one. This number was decreased during the year by the suspension of the dental department of the St. Louis College of Physicians and Surgeons, but increased by the establishment of the dental department of Tennessee Medical College, at Knoxville, Tenn., the Western Dental College, at Kansas City, Mo., and the U. S. Dental College, at Chicago. The number of dental colleges in active operation at the present time being thirty-three.

At the commencements held* since the last meeting of this association, from twenty-nine of these colleges there were graduated nine hundred and sixty-three persons, an increase of one hundred and sixty-seven over the preceding year. The ratio of increase in the number of graduates this year is three times as great as it was last year over the year preceding it.

The total number of graduates during the past years (1886–1890 inclusive) is three thousand six hundred and five.

* No report was received from the Northwestern College of Dental Surgery and the National University (2), while the Western Dental College and the Dental Department of Tennessee Medical College have held no commencement (2). Total 4.

The rapid multiplication of dental schools in the United States involves a question which is menacing the future prosperity of the dental profession. The results in all probability will be similar to the results attained by the medical schools of this country, who turn out annually, to prey on an unsuspecting public, a number of men which largely exceeds the number of graduates in Great Britain, France, Germany, Italy and Austria combined. This has been carried to such an extent that the medical graduate is the laughing-stock of his trans-atlantic confrère. He now swarms in such numbers in the United States that one out of every six hundred is a medical graduate. At the present rate of progress made by the dental schools of the United States, they will soon equal, in fertility, at least, the medical colleges of this country.

While eventually the subject of education will probably be under national control, at the present time some means ought to be adopted whereby the rapid increase of so-called colleges might be checked. Possibly the only remedy at present lies in the amendment of State constitutions, so that at least none but "reputable and capable" men may be able to secure articles of incorporation. In one State the incorporation of dental colleges and infirmaries is almost co-equal with the issuance of dog licenses. The section is not prepared to offer any special remedy, but hopes that members of the association may reflect on the question and be prepared to adopt some means to check the evil before its serious consequences become more marked. To one subject the section would direct attention. There is to-day, in the literary and scientific elements of society, an effort being made to establish a National University at Washington, D. C. As that idea matures, which will probably be in the not-far-distant future, those interested in the progress of dentistry should be on the alert and see that our profession is there represented.

The advantages offered for the establishment of such an institution in the capital of our country are too patent to be overlooked. First the climate for eight months in the year is hardly surpassed in our borders. It is the home of men of talent—students of profound and varied ability and of institutions such as the Smithsonian National Museum, Government Surveys and Commissioners, American Medical Museum, Philosophical societies, National geographical, agricultural and chemical libraries embracing over

1,000,000 volumes, and laboratories embracing illustrative material in every department of medicine and surgery.

With anxiety and interest every earnest member of the dental profession is looking to the action of the "National Association of Dental College Faculties." The adoption last year by that body of a resolution requiring all schools connected therewith to adopt a three years graded course of not less than five months for the session of 1891 and '92, to be continued thereafter by all such schools, was certainly a forward step, which, it is to be hoped, will be fruitful of much good. That this step shall be maintained, so that the profession may reap the benefit of this united and progressive action, depends largely upon the State Boards of Dental Examiners and the encouragement they receive from the National Board of Examiners. It is an easy matter for schools to obtain representatives in the Association of Dental Faculties, and advertise in their announcement that their requirements are consistent and in accord with said Association, and subsequently in the admission and graduation of students to ignore every vital principle therein involved. The State Examining Boards are the only power capable of correcting this malfeasence, and unless they are willing to exercise this power the resolutions proclaiming this advance in educational institutions are but blots upon their books, and as worthless as a discarded garment. It is well known that a prominent school has so advertised its accord with the association of faculties and at the same time has violated the latter's requirements when a few students were to be gained thereby, and yet their diplomas have been endorsed as freely as those from schools where every letter has been conscientiously adhered to.

Since the last meeting of this body two States have so modified their dental law as to require an examination and endorsement of all who propose to practice within their borders or commonwealth without regard to where the graduate's diploma or certificate was acquired. Massachusetts and New Jersey are the States which have taken this step which your chairman of the section believes is in the right direction. State Boards of Examiners share with the faculties an important responsibility, and such action on their part must prove a great incentive to students to be thorough and well-grounded in principles and practice. Of course the value of this State Board examination as well as its justice, depends upon the qualifications of those conducting it. It is not enough that the

members of this board of examiners enjoy the emoluments of a large and remunerative practice, or that they be held in good repute by their neighbors, and have the degree of D. D. S. previously obtained from some college Any one or indeed all of these are not necessarily qualifications for the proper performance of such a function. The qualifications of the State *critic* or *examiner* must depend upon judgment. This judgment must be ripened or trained through what may be termed first hand knowledge, knowledge the result of practical experience and experimentation.

One with a very limited experience may judge of the density and finish of a filling or a piece of prosthetic dentistry, but may be very poorly qualified to criticise the appropriateness of the one or adaptation of the other. An eminent professor has said "Our knowledge of the universe depends upon our contact with it, and may be expressed in what we call science." So one's knowledge of dentistry depends not only on his familiarity with the materials used, but also on the knowledge possessed of the tissues or organs upon which the operations are performed. So just in proportion to the extent of this knowledge gained from contact, is the knowledge of the science of dentistry broad or narrow.

If it was only practical skill, or skill in technique that was required, the student need not go beyond the preceptor's office and laboratory; but fortunately our colleges are instituted for a deeper and broader purpose. The forces of nature as embraced in biology, chemistry, metallurgy, etc., etc., should be and are taught in our best [illegible] as a matter of necessity in the lecture-room, clinics

The last paragraph on page 52 should read as follows:

Since the last meeting of this body, three States, Mississippi, New Jersey and Minnesota, have so modified their dental laws as to require an examination and endorsement of all who propose to practice within their borders or commonwealths, without regard to where the graduates' diplomas or certificates were acquired. Massachusetts had three years previously passed such a law, thereby inaugurating a step which your chairman of the section believes to be in the right direction.

C. N. PEIRCE, *Chairman Section II.*

ture or eutopian; but at the present time the same ideas are accepted by the section as worthy of voice and are as follows:

In view of the fact that a very large proportion of our dental schools are dependent upon the class in attendance for support, and that the compensation to professors and demonstrators has a like sustenance, the temptation is constantly to increase the class beyond capacity for instruction, and to estimate its value by numbers rather than quality. To such an extent has this been true in the desire to excell by publishing a large graduating class, that a prominent school some two or three years since graduated the same five students two successive years. To express the condition of our educational institutions tersely and in a few words—we should say, that under the present organization of a very large majority of our schools, the tendency or temptation is to insufficiency rather than proficiency, to superficiality rather than solidity. Therefore we deem it an imperative necessity for growth and proficiency that there should be established a higher standard than is now required by any of our dental or medico-dental schools. And that this Association now in session should before adjournment appoint a committee of five to consider the advisibility of establishing a National Board who would be clothed with power to confer a title or degree upon those members of our profession who had attained a well rounded degree of proficiency by experimental and true scientific work to make them worthy of such distinction. The object or purpose of this action would be toward a broader, a more liberal education in everything that pertains to the profession of dentistry.

At the last annual meeting the following resolution was adopted:

Resolved, That Section II. be instructed to formulate and present at the next meeting of this association a plan of work for the sections of the association.

Many of the members of this association are not satisfied with the method now in vogue of doing the work of the association, and the resolution was adopted, in all probability, for the purpose of having some means devised whereby the annual labors of the association may be made more valuable.

An attempt was made by the secretary to secure reports of the meetings of the various State and local societies, to get abstracts of the papers read before them and of the discussions following. The secretary issued the following circular-letter to secretaries of societies:

TO SECRETARIES OF DENTAL SOCIETIES IN THE UNITED STATES.

A plan under which the work of the various sections of the American Dental Association should be done is being elaborated by the section to which this subject was referred at the last meeting of the association. The secretaries of the various dental societies are requested to prepare (or have some competent member of the society do so) a brief, concise synopsis of the work of the society. This should include extracts from the papers read and from the discussions following, and should include mention of every item of scientific value brought forward during the meeting of the respective societies, a description of new instruments, appliances, and in fact a mention of *everything* worthy of notice. These reports should be sent as soon as possible after the adjournment of the meeting of the respective societies, to the secretary of Section II, A. D. A. (Louis Ottofy, 70 Dearborn street, Chicago). They will then be separated and sent to the respective chairmen of the various sections. In this way the chairman of each section will receive a report of everything that has been accomplished by the different societies of the United States in the particular branch represented by his section. The sections will then prepare their reports from these State and local reports and thus present an entire exhibit of the profession's advance and labor during the year. The societies which contribute to the accomplishment of this object will receive due credit in the report of each section.

Please forward at once to the undersigned any papers, or essays, or abstracts of them, read during the past year, for the purpose herein mentioned.

Credit will be given your organization for the work done during the year.

Address all communictations to

LOUIS OTTOFY, *Secy. Sec. II, A. D. A.*,
70 Dearborn Street, Chicago.

The intention was to secure the scientific reports to distribute to the respective sections of this association in order that they might present whatever they found worthy in their report to this association. But few replies were received. This led to an inquiry regarding the American Dental Association, and the relation which it bears to the dental societies and the profession generally.

The investigation disclosed the following facts:

1. That the American Dental Association is not a truly representative body of the profession.

2. That its membership is too small to accomplish what it should.

3. That every dental society ought to be represented by one or more delegates, and that these delegates should bring to it a report of the entire work of their societies during the preceding year, and thus cause the reports of these sections to contain a perfect epitome of the entire scientific doings of the profession in the United States.

In securing a list of members of all dental societies in the United States, we find that there are not less than ninety nor more

than one hundred dental societies—strictly speaking and excluding alumni and other kindred organizations—in the United States. Every State, except Montana, Nevada, Oregon and Washington, has a State society, and near all of them one or more local societies. The District of Columbia has two dental societies. None of the eight territories has any dental society.

The approximate aggregate of membership in these ninety odd societies is between three thousand and three thousand five hundred. These societies are classed as national, semi-national, interstate, State, local, county and city societies. This certainly large membership was represented last year in this association by only thirty-eight delegates who represented twenty-two societies which are located in twelve States, and the District of Columbia. The dentists of eighteen States and eight territories were not even represented in the membership of the association by any one. Three States contribute 75 members, while the remaining twenty-three States contribute only 100 members. It will also be noted that with the exception of twenty-three who may be credited to the West, two to the Northwest, and fourteen who are from the South the association is made up of 136 dentists from the Eastern States, making it appear more local than national.

This condition ought not to be tolerated. The strength and power of the association must come from unity. Some means should be adopted whereby the membership of the association may be increased to at least one thousand. An invitation or an appeal ought to be issued to every society to send delegates to the meetings of this association, even if it shall be necessary for the local societies to pay fair compensation to their representative. When this can be accomplished the section would recommend the following method of work to the sections:

Each section should appoint some one of its members, or delegate some one to attend the meetings of dental societies, and make reports of their proceedings, report important clinics, note new appliances and methods and make a report to their respective sections, or make one entire report to be divided and each section to be given those parts relating to its own special work. In addition to these reports, abstracts of papers published in various journals should be made. The sections then ought to sift out the chaff and present to the association a summary of everything that has occurred affecting dental science in any way, direct or collateral.

The length of this report makes it impossible to present much in relation to dental literature. Among the most prominent of works published during the year is a treatise on the irregularities of the teeth and their correction, designed for practitioners and students, by John N. Farrar, M. D., D. D. S., of New York City. This publication when complete will be one of the most remarkable and creditable productions which the present decade has witnessed. It will consist of three volumes—divided for the convenience of the student into several parts.

The first volume deals with the history and etiology of the subject; the basal principles of regulation; nomenclature; principles of construction of apparatus; retaining devices; laboratory rules for manufacturing devices; application of force; eruption; antagonism; interdental spaces and the correction of irregularities by grinding, and by extraction.

The second volume contains the classification of irregularities and the various methods of their treatment; such as straightening teeth to line; turning and elevating teeth; widening and enlarging the dental arch, and the correction of protruding teeth.

The third volume is largely pictorial—being an object index of all mechanisms described in the other volumes. While in volume two, the order is governed by the locality and kind of operations, in volume three classification is made according to the principles upon which each mechanism is constructed. Those acting by *springs*, or *gradual*, in one class, and those by *screws*, or positive, in the other.

The author of this publication has been at an expense of nearly (7,000) seven thousand dollars in the production of upwards of two thousand (2,000) engravings.

The first volume will be complete for the purchaser by October first; the second and third will soon follow as the material is now all in the hands of the publisher.

There is nothing to report on dental nomenclature save a paper noted from Dr. W. H. Atkinson. The section recognize that little can be accomplished upon this subject save it is considered by some international organization.

The section presents for your consideration the following papers: "Dental Education, Nomenclature and Terminology," by W. H. Atkinson of N. Y. City. "Scientific Instruction in our Colleges," by A. H. Thompson of Topeka, Kas. "Dental Education," by C. B. Atkinson of N. Y. City. "National Dental Education," by R. Ottolengui of N. Y. City.

SECTION II.—CONTINUED.

Education, Nomenclature and Terminology.

PAPER BY WM. H. ATKINSON, OF THE SECTION.

Anything like demonstrative presentment of education, nomenclature and terminology requires an extent of study, labor and statement quite beyond the capacity of any individual to present within the limits accorded to a single section of an Association, composed of eight distinct sections and limited to four days of elaboration, presentment and adjustment.

The term itself, education, signifies to draw out of the storehouse of the mind the excerpts of canceled values of the various stages of mental activity operated in consciousness, from the sense of deficiency, to the sense of fullness of the mental receptacles of the values of all the minor propositions, as bases of the demonstrations capable of being formulated and held in consciousness, ready for use in the efforts to communicate in a satisfactory manner the mental processes through which they have been acquired. This involves a comprehension of the work in the progress of its growth, to the completion of the wording representing the stages of mentation through which we are carried to attain a full understanding of the processes, so that they may be recorded as knowledge, to be applied to teaching, or any of the exercises pertaining to the rectification of irregularity, however induced, in the understanding and the execution or practicalization of the knowledge pertaining to the healing of mind and body.

The naming of these stages would properly be the work of nomenclature, or the classification of the names of things and the changes resultant upon their association and disassociation everywhere presented in planetary existence, involving mineralistic, vegetablistic, animalistic and humanistic modes of combination and disruption and progressive building of the bodies capable of function.

The technique of recording all these various mutations involves the proper arrangement of terms, which are the elements in *terminology*, upon which correct classification depends.

The greatest obstacle in the way of the teacher is the assumption of finality that has been practiced in the past, requiring the learner to refer and defer to the recorded statements in the earlier and unripe states of the records that have been called the only measure of scientific certitude: and I know of no way of getting rid of these dead weights, so successful as depending upon the environment, in part and in whole, as the source of the inspiration, that coming in serial order, satisfies the unrest of the mind of the inquirer. In fact, when we have said "in the whole" we have left, unconsciously, an open door for something to be added to it in the progress of our investigations of any subject engaging the mind. By thus saying, I do not mean to ignore the potency of memorized trends of thought, but I do mean to advocate the necessity of keeping in touch with the present luminosity and perspicacity of the conjoined illumination of learners and teachers throughout the whole range of most massive and most minute research.

Philosophy, the love of wisdom, is an example of obstruction, by assuming it as the ultimate of all acquisition; whereas echosophy, or the possession of wisdom, is that which we seek instinctively and serially, but have not dared to jump out of the old rut and say so plainly.

The particular instance that comes to my mind now as specially obstructive to our progress in the investigation of function is the attributing of the power which operates the function to the body in which the changes occur. For instance, it is said that the liver secretes bile, which is not true. Bile is secreted in the liver, by a process not yet demonstratively formulated. Probably the greatest mistake is in saying, give me the measure of phosphorous on a planet and I will give you the amount of mental activity possible to that planet; which is often formulated in a modification of this statement by saying the brain secretes thought; where no brain is there is lack of mental action, and similar statements. All such naturalists fail to see that the power is before and in all its manifestations; the justification of which has already been stated in this paper, viz: The physiology of the mineral kingdom is crystallization, that of the vegetable kingdom is cellulation, and that of the

animal kingdom corpusculation. All these are operated under the behest and by the energy of the typal endowment of light and plus.

A friend asks, what is the significance of the skin? and probably had little conception of the grand reach of the significance of such a query. The skin is the involucrum of individualities, and hence is predicable of the minutest corpuscle and the voluminous aggregations of the same which limits tissues, organs and systems. Take a piece of human skin and study it minutely and it will be found to consist of an outer surface and an attached surface to the body of the organs constituting the system. Our survey will not be complete if we do not include the inner skin, or mucous membrane, constructed of very similar elements, and so nearly alike in endowment that they may readily, vicariously perform the function of each under stress of necessity.

The principal function of the skin and the mucous membrane is depurative; that is to say, the throwing out of excess of pabulum, effete matter and debris resultant upon functional activity of the underlying organs. The mucous membrane normally absorbs nutrient material when reduced to the character of a perfect peptone, and under certain circumstances the skin may in a minor degree do the same when immersed in a solution in which perfect peptones abound.

All this and more, has to be stored in the mind, either in implicit or explicit condition, to enable us to avail ourselves of the best possible modes of education. The stored mental energies of ancestry is one measure of individual endowment which, like the organs of the body, are built after the type of converging and diverging impacts of maternal and paternal experiences in the line of longevity, activity or sluggishness of the individuals composing the line. This hereditary endowment of past molecular experiences and affectional activities of ancestry lays the foundation by involution of the possibilities of evolution, of which so much is made in these days of scientific inquiry as to the origin and development of genera, species, varieties and sportive differences.

I have seen children, for whose mothers I performed the function of obstetrician, whom I recognized as belonging to the family by their manner of locomotion when I only saw their backs; and if in one man's experience of a short career there shall be a multiplicity of examples pointing to this doctrine, it will not be deemed hallucination or dementia to state that the agreements and dis-

agreements, the love pats and the quarrels indulged in by the parents are visited upon their children, as the Scripture says, to the third and fourth generation. Then let those teachers who love their calling and their pupils take courage and go forward, in full faith that the inspiration of the Almighty which giveth man understanding will ever be present to illuminate and lead in ways prevenient those for whom our best affections go out, with yearning desire for their enlargement and completion in the line of investigation before them.

Had we all the record of all the past condensed into a single syllabus of one paragraph, we would be minus of the accomplishment of our desire to lead our progeny into fuller appreciation and understanding of the problems of life; for were this the case we could only depend upon the recorded inspirations and elaborations of our predecessors, and be shut out of the luminosity of present enlightenment coming to us through the increased facility of revelation and invention of the time.

I need only to say that before the days of telegraphy, stenography and phonography the terminology belonging to these departments would be a dead letter to all those who had not kept in touch with the advancement of events.

Education, to be legitimately exercised in these days, must transcend any legitimate interpretation of the philology belonging to this classification. It is much more difficult to unlearn earnestly adopted doctrines than to accept even difficult problems of new presentment contradictory to and demonstrative of the falsity of the claim of finality that has hitherto held the field in the adoption of terminology, which lies at the basis of all our nomenclature.

Just here allow me to say that I was not in accord with the vote adopting the classification method from The American Medical Association in this body; and although my then inspirational position was held in abeyance out of respect for the vote of the majority, I now wish to emphasize the importance of depending upon present illumination rather than musty records of that which is not up to the status of present development.

The older members of this body will remember that I have complained repeatedly that we have not yet attained, in our mode of work, to a higher status than that of a mere convention, and that we had no syllabus of classification that should sufficiently lay out different lines of work, to enable us to accomplish the work of each

section as a separate but related exercise; so that we need not have too much iteration and reiteration of the ground and doctrine properly belonging to each section as designated by its specific name. If we are to have the coming times distinctly in advance upon the already effete teachings we must be awake to something better than the long didactic preachments that so tenaciously hold the field in church and state and in professional and societary convocations.

Does any one ask how this shall be done? The reply is: "The word is nigh thee, even in thy mouth, to do with thy might the work that thou undertakest," for the good it may be to others independently of its reflex upon the ego. In other words, to esteem our life work as a mission committed to our charge for the good of all; and, being governed by the opportunities of the time, demonstrate anything that we may suppose to be in advance, that the adjudication and legitimate criticism of the whole may be brought to bear upon the subject, and thus bring it to a settlement and a formulation of such perspicacity as to meet the demands of the coming times.

This gives me the opportunity to say that the effort was made in the reports of nine successive years to arrive at something that should be really foundational; but it met with little appreciation, and direct personal opposition by the very good men who esteemed themselves the *creme de la creme* of the organization, but who were as deficient as babes in the comprehension of the grasp of the subject in its breadth and its details. A vote of the body at the Highland House in Cincinnati was carried at the instigation of a man who was really earnest, and assumed a perception of finalities entirely beyond anything claimed in this series of reports, but said that they could not be made useful to this body, nor to the world, by reason of the difference of view of what has been and what is and what may be hoped for. I say this as a sort of salvo to my scourged conscience for having, like a coward, drawn back and allowed the clouds of darkness to overshadow the body as they have until this day. I am aware that this is speaking in general terms, but I esteem them as foundational and essential to the completeness and usefulness of the reports that may be vouchsafed us by fresh and vigorous blood being integrated into the organization of this section.

SECTION II.—CONTINUED.

Scientific Instruction in Our Colleges.

PAPER BY A. H. THOMPSON, OF THE SECTION.

That scientific education, *i. e.*, pure science and scientific methods, is in great danger in our colleges, there is little doubt. The signs of the times cause its friends great anxiety. The practical man is abroad and his crusade against everything that does not promise a visible return in revenue is beginning to make itself felt even within the sacred precincts of our halls of learning. He has crossed the threshold of our professional educational system and has instilled a contempt for learning and pure science into the minds of students, so that their ambition is not for a high standard of attainments, but for the mere certificate of an education, and the learning of the mere methods of performing operations, that they may hasten on to the period of money making. The student's instincts are entirely commercial, and the value he places upon all instruction depends upon its bearing upon paying operations. He is practical and takes his cue from the omnipresent practical man, who decries pure science as the pastime of cranks, or at best as an amusement of the curious. Our pure science is in danger from these men, who look upon it as expensive and useless, and wasteful of the student's time. They would have it reduced on our college curriculum, and its place filled with clinical and practical instruction.

The plea of this paper is for the preservation and extension of the purely scientific part of our curricula, for the planting and nurturing of that culture in pure science which shall insure height and breadth and depth of mind, that the student may be more of a thinking man and less of an operating machine. We would that he should have the strength and joy that comes from culture and enthusiasm; that he would love science for its own sake; that he would give the first place in his mind to

a knowledge of the basal principles in their scientific purity, and that he would love learning for its ennobling powers, and not merely for the return it may make in money. It is this debasing estimate of knowledge and all attainments that is crushing the nobler mind-life out of the people of our day, the estimate that reduces everything to a materialistic consideration. The Nemesis of materialism broods over our land like a death-damp, poisoning all desires for a higher life, paralizing noble impulses, weaving its deadly spell into the hearts and lives of our hopeful and enthusiastic youth, leading them away captive. This beastial materialism has polluted and debased science and prostituted it to the ignoble ends of money getting. It is against this low estimate of the higher things of life—or the money estimate of our higher education—that we enter protest. We would that our science should be upheld because it is science and because it is ennobling and elevating and because it is the basis of all our knowledge and practice.

It is true, of course that this cry against sordid and earthly minds and grasping men, who live only to make money, and estimate everything at its money value, is as old as the race. The ancient classical writers bemoan the degeneracy of their age—that that men should prefer gold and riches to mental culture and the treasures of the soul. It is also true that the practical man has always raised his voice in our professional councils against mere science and abstract learning, and demanded a modification of our studies that it should be more "practical," *i. e.*, with more reference to methods of operating, more artisan and industrial, with the exclusion of the things that do not bear directly upon practice. It is also true that in spite of all opposition and in spite of the perenial crusade of the practical men, that pure science has advanced—irregularly it is true—and carried forward our education. But it is also true that the practical man and the practical idea are still powerful, and still drag upon the wheels of scientific progress. It obstructs the highest purposes of science and culture and the pursuit of learning for its own sake, and substitutes as the end of learning the power of mere money-making, which it may confer. And the worst of it is that there are few minds in this practical, materialistic age that can grasp any other estimate of life. The creed of the religion of money-making, *i. e.*, "the chief end of man is to get money," is in the very air we breathe. We cannot wonder that our young people are polluted by it, and that they grow up to care for

nothing else. It is a heartless, pitiless slavery. But the few who by temperament, acquirements or experience have escaped this thralldom, know full well the disappointment of mere riches, and the joy there is in higher things. They know that the things of real worth, the culture which lifts men and ennobles their minds, are not of the earth, and are not to be estimated by a money value. Pure science, abstract science, theoretical science, if you will, should be cultivated in our schools, not only for the ultimate importance it bears to practice as its basis, but for its mental and ethical value to the student. It will lift him to a realm unknown in his sordid, practical life, and make him the friend and companion of heroes. He will be brought into touch with the master spirits of the ages, and in our own field with those who have made our sciences and carried forward the banner of progress.

And yet we would not detract from the value of practical training in our schools. Its importance is so apparent that it could not be ignored if we would. We would not be ungracious to the memory of the Varneys or the Webbs, who have gone before, or to the host of the living artistic operators who by their high skill have raised the standard of operative dentistry. On the contrary we glory in the honor which they reflect on the profession. These are nature's noblemen and they wrought with their might for the advancement of operative dentistry, and they deserve all honor. Artistic operating has won its way and carried all before it—and that is well. We would attain the highest artistic perfection possible. The momentum is so strong in this direction that it will take care of itself. But, it is not necessary to the success of the artistic branch of our education that the scientific part should be pushed aside as cumbersome and useless. It is not necessary that pure science should be neglected, that applied science should succeed. It is not necessary that science should be banished, science which is the basis of practice, that practice should be better taught. It is not necessary to reject the fundamental principles, that all the time and energy of the student may be given to the superstructure of practice. It is not necessary to banish all knowledge that all effort may be given to action. In fact these propositions bear their proof upon the face. The basis of action is knowledge—the basis of practice is science. Without pure science we cannot have advanced practice.

If it were true that practical education were the main thing, the only thing worth considering, as the practical man would have us believe, it were better to return to the old system of office apprenticeship. No time was wasted on theory or science in that system and the student had no end of practical experience. As a practical education it supplied numerous advantages over the college system. The student was untrammeled by books and lectures and went in for a practical education—and that as quickly as possible. Its brevity was its main recommendation. Why then should the practical man wish to degrade our college system by abolishing the scientific features that make it a college, and reducing it to an industrial school? It would be better to return to the old office system at once, which is the practical system in perfection. The college system of to-day is the embodied protest of the profession against the old office apprentice system. It originated in response to a demand for a higher education. Its main feature is to teach young men entering the profession the scientific principles which underlie practice, and in addition, give clinical instruction in the best methods of practice. It is the scientific and industrial education combined.

But we must not lose sight of the fact, the main fact, that edution in the basal sciences, scientific instruction, is the main feature, the important factor, of college education. Scientific knowledge of the underlying principles is the main, the primary structure, the foundation; the superstructure of practice is built upon and depends on it, and is secondary. The primary principles are permanent and unvariable—the superstructure of practice is variable and transitory. Practice is subject to alteration and changes as new methods, new inventions or appliances appear, and methods vary from year to year, but the foundation sciences are stable and changeless. Is it not essential then that a knowledge of these sciences should be thorough and that the student should be well grounded in the great principles?

And then again, practice is science applied and materialized. Science has made practice possible. Without knowledge of the qualities of things, we could not have accomplished what we have in practice. Therefore science is a practical thing. Modern civilization is the product of science—it is thought materialized. It differs from ancient civilization in that man has conquered more of nature and made it more tributary to his wants. The accumulated

knowledge of the centuries is his storehouse. The savage man thinks but little, he knows but little, he can do but little. Like the animals around him he is but an automaton and acts by force and not by thought. He is practical. He is not hampered by theories or science or the effort or products of thought. The civilized man acts and lives by thought and not by force. By thought he subdues forces and makes them serve him. By thought he wrings secrets from nature and applies them to his uses. By thought he sounds the mysteries of chemical and physical activity, and brings therefrom substances and powers which enable him to annihilate distance and matter and defy disease. By thought he forces unwilling nature to minister to him in countless ways, and it is the knowledge of things, it is pure science, which enables him to do this. Is it not folly, is it not absurd, then, to ignore the importance of the teaching of pure science in our schools, or to curtail it in any department?

It is apparent to all that we are entering upon a new era in dental education, and in the revolution that is upon us, the friends of pure science must be vigilant that its study is not molested by the iconoclastic wave of practicalism and the craze for mere money making that is sweeping over us. We must see to it that the position its importance warrants and demands, is maintained, and that it is given the attention it should have that students may receive the full benefits of science teaching in all its bearings. To that end one of the first conditions is that of methods of teaching. In this connection we notice that when the three years course becomes general, it will necessitate a graded course of study.

This method is scientific and will be productive of good results. It will check the rude haste and rush with which students try to get through college, and will lead to deeper learning by reason of greater leisure for study. In such a course the first year will be largely class-room work, and catechetical teaching will be its principal feature. This will be a sort of primary work and all will agree that new students are much in need of such a department. The main cause of the lowering of the standard under the recent college system, was that the teaching had to be brought down to a very low level to be rendered comprehensible to the minds of men unaccustomed to study. And the worst of it was that the standard had to be kept low to allow of completion of the course in a brief time. In the three years course this necessity will be obviated, for the

student will have ample time to learn to study and to acquire knowledge also. The first year of class work and catechetical instruction will prepare him for study and perhaps lay the first layer of the foundation; the next should be a combination of the class-room system and didactic lectures. By this time the student will have learned to study and can proceed rapidly in the acquisition of knowledge. The last year should be entirely didactic—with regular examinations, of course—as becoming advanced students and the dignity of the cultured gentleman whom we would then have before us. Simplification in the first year, precision in the second year and amplification in the third year, should be the keynote of the three years course. But will the colleges do this, or will they devote more time to the clinical department and make it the main thing? With the tendency to practical teaching, there is danger of this, but it would be a great mistake to subordinate the fundamentals to the secondary branches.

A crying need of the present time is for better text-books, and for the graded course they will become a necessity. There is no doubt but that the present pondrous text-books, clumsy and unwieldly as they are, are totally unfitted for the use of students. They are padded with obsolete and oft-times erroneous matter, and do not keep up with scientific discovery and progress. What we require is a series of graded monographs on all branches and parts of branches. The primary books should be brief, plain and simple for the first year. For the second year broad, careful and exact, and for the third year thorough, deep and comprehensive. The principles must first be laid down carefully and the student led gradually up to the acquisition of the highest science and the highest culture of mind and hand.

A great fault with college teaching has been the inexperience of teachers *as* teachers. They are unused to teaching as a special work—are not professional teachers trained for the duties of imparting knowledge. For a busy practitioner to rush from his chair to the lecture room and hurriedly fill his hour by an illy-prepared lecture, when his body is weary, his mind pre-occupied and his interest in the work at a low ebb, is not good teaching. For a practitioner to be a good teacher is a mere stroke of natural genius, not of training. We need teachers who shall give their lives to the work with inborn and developed special fitness for it; who shall have

leisure to study and investigate. Such a corps of men will do our colleges honor, and such men alone can do the work well.

The standard of admission should be extended so as to include not only a good general education, but also some elementary knowledge, at least, of chemistry, physics, anatomy and physiology, so that so much of the time of our teachers need not be occupied in teaching the beginnings of these sciences, as is now the case. We hear much of manual training nowadays, and it should undoubtedly be made a necessary part of the student's dental education; but as has been well said, it is the fitting school that should train the student in manual manipulation, artistic principles, knowledge of materials and the working of them. These things belong to the primary schools and primary training, and should not encumber the collegiate course. Then again there is danger in this manual training fad, and there is something to be said on both sides. If the training is to be bestowed upon boys in preparatory schools with a view to developing muscular strength, skill and precision of movement of the hand, well and good. But if it is to intrude into our college curricula to make athletes, blacksmiths and mere artisans at the expense and by the neglect of scientific culture and intellectual development, we had better have none of it. We cannot afford the sacrifice. Manual training at the expense of scientific culture, would be ruin. The proper cultivation and development of both is what we all desire of course, but the danger must be kept in sight.

A new and curious factor of dental education has arisen recently in the matter of the examination of graduates of colleges by State Boards, before being allowed to practice. The immediate result of this movement appears to be a conflict between the boards and the colleges, in which the latter are likely to get the worst of it. That the State Boards, by the laws licensing practice, will mould the education of the future, there is little doubt. What these examinations dictate will necessarily become the education of the colleges, and it requires no ghost from the grave to tell us that those examinations will be largely practical. The boards will be made up of men from the ranks of practicing dentists, who are practical men by necessity, and rarely students by inclination, and the sciences in their examinations will be neglected. Right here we raise a warning cry to the State Boards, pleading that they combat this tendency to the elevation of the practical over the scientific in their examina-

tions. If they are not prepared to examine in the scientific branches, they should prepare for it, or employ specialists to conduct such examinations for them. To lower scientific education is to sound the death knell of progress in the profession. They must not give undue prominence to practice, which is secondary, and neglect the scientific branches, the primary basis. To do this is to retrograde and lower our education, for the colleges will be bound to follow where the boards lead. The boards are vested with supreme power and from them there is no appeal. Therefore their responsibilities are great and they must consider carefully and act wisely. They are the custodians of our professional education and progress, and with them rests the standards of the dental profession of the future. Let them look to it that they are worthy of the trust!

The thoroughly qualified man in any profession is the one who is thoroughly grounded in the fundamentals. We have confidence in the physician or lawyer or theologian who, by a long course of study or training, has become well educated and learned in the fundamental principles of his profession, so that he can approach practice from this strong vantage ground. The weak man is the one who is superficially educated, who knows little of the great principles underlying his calling and is a self-confessed empiric. Empiricians will not answer the demand of an intelligent age. Practice must not rest upon experiment but upon science, a professional education is presumably a scientific education. The trades are learned by practical methods alone, but the professions are acquired by the study of the sciences involved. We claim to be a profession, therefore let our education be scientific that we may justify the claim. Let us guard the scientific branches as the vital part of our education, to lose which would be to lose all.

SECTION II.—CONTINUED.

Education and the Obligations it Involves.

VOLUNTARY PAPER BY CHAS. B. ATKINSON, NEW YORK.

Education presents a very broad field for consideration. It may deal with ideal results, and be confined within practical limits. It is from the ideal, nevertheless, though it may be impractical, that the true growth comes. Criticism upon advanced writings, or writings on advanced lines of thought, is often expressed in some such words as "up in the clouds," or "metaphysical."

The severely practical mind, or perhaps rather *the severely bigoted* mind, does not grasp the value of speculation upon the *possibilities* of new lines of effort. Without these, invention would fall dead, and dentists employ the results of inventive genius to a very large extent. The dental cry is for skill, higher and higher—in manipulation and in implements, appliances and materials. Experiments may be practical, carefully thought out efforts, and they may be merely time occupied with no definite purpose in view, and based upon no definite information. Both of these efforts reach useful ends, but it is apparent which may be expected to realize the best results.

Education should embrace *all the higher* attainments. Speculation and indefiniteness in the education of undergraduates is pernicious. The true training of the student will occupy all the time placed at his disposal to fulfill the prescribed college course. The various theories and methods, many of them severely antagonistic, which are embraced in college curriculæ, give rise to the development of practitioners with divergent ideas from the start upon questions which may readily be brought up and receive common explanation, and proved to be governed by definite conditions, and so made to agree. The lack of harmony in the profession and among the college faculties, as regards their several methods of

teaching, is responsible for this. Each chair seems to think it necessary and desirable to promulgate a theory for which they should receive special credit. This is one of the toles to invite new students, the intimation being given that information in certain specified subjects, will not in other schools at all compare with the one in question. Each and every school has some one or more specially meritorious methods, to a great extent enjoyed individually, but a broad professional spirit would indicate a proper course to be inter-communication among the faculties frequently, or enough to secure a practically common basis of education. Let all the schools teach dentistry the same way, let them harmonize their minds and theories, so that they will all stand agreed upon facts and methods. At least, if not endorsing the same methods, let *all* methods that are accepted by any sufficient number be promulgated in every school in the land. Give the student a chance to know all there is before the profession. That is the purpose of the school—to teach the assembled knowledge up to date, and always keep up to date. It would be considerable trouble to rewrite the lectures from year to year but where is the wisdom of reiterating the same old lecture year after year and session after session, without incorporating in it the changes that practice has brought to the profession.

Why is it that at our society meetings papers are written by the few, and discussed by the few even when dealing with practical everyday points? If the proper spirit of harmony were present in our societies, the youngest among us would feel free to have his say on every question discussed. Individual preferment stands steadily in our way. How often do we hear a man who says he knows better, and who does know better, when taken to task for extracting teeth at wholesale, make the remark, "Yes, I know it is wrong, but what am I to do? So-and-so does it, the people will have it, and my family must live." Who is to blame for the people demanding extraction? The dentist, every time. Perhaps not the immediate one before whom the issue is brought, but the class of men in general who have not the common honesty, education, moral courage, humanity, sense of decency and belief in the hereafter, to stand up against indiscriminate extraction of teeth.

One may say this day is passing away, but oh, how slowly. Not long since, in this present year, at a dinner given by dentists to a dentist, the great administrator of nitrous oxide gas, George

Quackenbos Colton, rose to his feet and told a tale of how he had extracted *three thousand* teeth in a limited time in the city of New Haven, in the office of a dentist. The dentist was there and did not deny it, and but one voice was heard in condemnation of that outrage on common decency—the voice of Dr. Bartholemew, of Springfield, Mass. That a man could find it possible, indeed, would dare to assemble with dentists and deliberately make such a statement, boast of it, in fact, shows that there still is need to ring the changes upon "no extraction."

How many college students know how to recognize a case of pyorrhœa alveolaris? How many practicing dentists of considerable experience actually claim the disease to be incurable and recommend extraction, or the patient waiting of the sufferer till the teeth drop out as the only thing that nature has in store for them?

These dentists must either disbelieve the published literature upon this subject, or ignore its reading.

When a man bases his fees upon a charge of $1 to $2 per hour of working time—just consider facts and see how many do that—what can you expect of such a man? His time must be occupied with cheap work from the patient's stand-point to make it possible for him to make a living. Such men are mechanics and should go into machine shops or carpenter shops or other mechanical shops, where they belong. Their comprehension is certainly beneath the standard that *dentists* should maintain. *Is* there any fair proportion of dentists who charge for treatment of teeth? Is there any fair proportion who charge a consultation fee for the time spent in talking over a case and doubtless giving the patients information which they use elsewhere to argue with some other practitioner on his fees for the work.

What proportion of dentists inquire of a patient who their last dentist was? or ask if the work is completed that the former dentist had undertaken, or make any effort to determine whether the patient owes a bill to some other dentist before they undertake the care of their case. This as a general rule, is unnecessary and impolitic, but many, many cases present for treatment with the plain statement that they have left a dentist to seek other treatment, and they are gathered right in, and if the second man (the gatherer) lost by them as badly as he makes it possible for the first man to lose his fees, it would but be a fair return. We talk about being a profession;—the great mass of us don't know what the

word "profession" means. The code of ethics is outraged every day, and so is common sense and common honesty, as between man and man. There is such a thing as being a merchant, a trader, a mechanic, and such a thing as being a professional gentleman, but they are widely different. This very association has witnessed a degree of political rivalry from which every aspect that could be called professional was removed, and the influence of this, which is called the "national" body, has been very seriously minified thereby. The first step that the education of a professional man seems to involve is a determination as to the propriety of the individual undertaking the study of the professional branch under consideration. The colleges have many times made the claim that they did the best they could with the poor material sent to them. This is a good argument, and it seems that were private pupilage made a requirement for admission to college, the tendency would be to gradually eliminate undesirable aspirants to practice. In this connection it seems proper to suggest a way that would permit an individual to enter the college course without being a pupil of a practitioner, and in such a way as would select the material as effectually, or more so perhaps, than the private pupilage could. One plan would be to have applicants recommended, after an examination as to antecedents and personal character by a local association, preferably a section of the State society; submit these applicants to a preliminary examination, not only as to intellectual attainment, but such an examination as would embrace the determination of manual dexterity and mental ingenuity from the mechanical aspect. There is no need for more men whose sole aim in life is to extract teeth, or put in rubber plates, and if the required moral qualities are not possessed by the student, the indications of which this preliminary examination would disclose, his further education in the profession will not benefit it. The status of morality is settled individually as a matter of inheritance, but also it may be influenced by early education and the surroundings of childhood, and by the time the student has reached the age that may make him eligible to undertake the college course, his moral nature is set in the direction that it must follow for the future. Hence this preliminary investigation can establish the quality of the student seeking dental education; that is, select the material the colleges ask for.

The societies that have been established in some of our colleges are a grand effort in preparing the student, along with his acquire-

ment of knowledge, for the effective use of his knowledge after graduation. However, the work of these societies should have some consideration from the faculties. It seems proper that the work done in them should influence to its proper extent the final examination and status of the student in his class. This would give a stimulus to perfect the work done that they now seem to lack. It would also stimulate the backward ones to come forward in the student's society, and the sooner a man learns this lesson the better it is for him and the patients under his charge. The mere fact of presenting a subject before an audience gives the presenter of it a wider and broader grasp of the subject in hand. It is an education directly beneficial to him; although many times undertaken with very different motives. Too many men look upon literature as a means of advertising. What inducement is there aside from the benefit that a professional man always feels in helping forward the standing of his profession by presenting questions to discussion; what other inducement can an individual have to cause him to take the time necessary to write his paper; take the time again to attend a meeting, pay his expenses and present it before an association? Some men seek preferment and think to get it, and do get it through these means; but it does seem when an association calmly invites a man to devote anywhere from $200 to $500 worth of his time, pay railroad fares of anywhere from $10 to $50, and hotel bills of a corresponding amount, they should be recompensed to the individual somehow. Undoubtedly each individual professional man owes to the body a tithe of work for the benefit of the whole, but what proportion of dentists are working for the benefit of the whole? The few bear the brunt of literature, the few the brunt of clinics, some of the rest hold office, and the remainder take all that's offered them. It seems that we owe something to our pioneers; the time is ripe for us to show in some tangible shape that we value and appreciate their efforts. An attempt was made in the State of New York to compass this desire when a Legion of Honor was proposed, to which only honored names should be eligible. A fear of politics letting in unhonored names, and perhaps dishonored names, caused the matter to be dropped. It was perhaps wise that it met such fate. But America —the United States of America—has born and bred several names that should live forever in dentistry. These names belong to individuals who have trod the rugged path and climbed the heights

of skill and knowledge, cleared away the stones and sticks, smoothed out the ruts and made it possible for us to expect to be a profession. Some of these honored names are now but names; of them we have but memory of the noble deeds accomplished. But we have with us living holders of honored names, whom we cannot afford to ignore any longer. It must be small satisfaction to an individual to only be able to say "when I am gone, I will be thought of." How much better, how much nobler of us, now while they are with us, to take off our hats and let them see and feel the honor we would do them. They have for years spent their money, spent their time, spent their brains, and spent their bodies for our behoof. We are better to-day for the efforts expended by them. It is our duty to make them feel it. It is a matter in which wise counsel should prevail, animosities, personalities, should be resolutely eliminated from any consideration given to this question; warning should be taken from past experiences, and such procedure adopted as would exclude misuse of this laudable effort. The matter is advanced here at this time because such an effort should emanate from the representative association, and in view of the proposed Dental Congress, it would seem well that such steps be initiated now as would produce creditable results at least by that time.

The occupancy of office in an association is supposed to carry honor with it. The contrary of this is too often true. This shows that election to office in a body such as this is not an adequate honor to bestow in recognition of the services the pioneers of dentistry have rendered in our growth. Some of these worthy names are unknown to literature. The voluminous writer does not of necessity belong in the list. True worth, and it only, should be the measure for decision. A professional education forces upon an individual certain duties. He is prepared to combat disease, and it is his duty to do it. Not as too many do—combat disease as a means of livelihood, because he is paid for the time spent in the effort—but combat disease because he is fitted to do it. The recompense will come to the earnest man every time. For some years to come, until the personnel of the profession has been purified of the improper elements now within its composition, the business element must needs have a voice, and a somewhat loud voice, but it need never be paramount to honesty. However, a man may be honest according to the training he has received. Here

the college is at fault. If unproved theories have been presented to him for facts without demonstration, and the opportunity for demonstration on his own account denied him, false doctrine may be the basis of his practice. With a properly arranged intellectuality, the three course studentship of six months each should be sufficient to acquire a practical knowledge of dentistry provided the other six months in each of the three years is devoted to infirmary practice. The preliminary examination now generally adopted is expected to deny admission to uneducated students. Education may ask of us to present to it proper material carefully selected and the exertion of such influence upon the college faculties as will equalize the instruction given in the colleges, and equalize the character of graduates ushered into practice. This would make it possible to meet the statements of those who urge repeated examination and pave the way for uniform laws and regulations for admission to practice. Graduates, the older graduates, owe it to the younger to set an example of probity and honor, as between themselves, and between themselves and their patients.

Ethics being based on simple honesty, common sense and good fellowship seems to be a question that would take care of itself, but it crops up for discussion—and does not that indicate that simple honesty, common sense and good fellowship are to an extent lacking in the profession at large.

SECTION II.—CONTINUED.

National Dental Education.

VOLUNTARY PAPER BY R. OTTOLENGUI, NEW YORK.

MR. PRESIDENT AND GENTLEMEN OF THE AMERICAN ASSOCIATION:

I have the honor to address you on the subject of advanced dental education. I have had some experience in journalism, and I have discoved that even a good and valuable idea may lie buried, and therefore lost for years, notwithstanding the fact that it may have appeared in a leading journal. Midst the busy rush in this waning century, we read, commend, and then—forget. To appeal to men's minds and obtain recognition for an idea, the originator must cry from the house-tops and keep crying till he attracts attention.

I have conceived an idea by which I hope to see the school system in our profession improved till the man who holds a degree which permits him to experiment on humanity, shall be a man whom humanity may trust. In my mind's eye I see the time when those who are endeavoring to retard our onward progress by advocating the idea that we have no individuality, but are only a part of something else, will be silent, because the honor which they seek for us will be unnecessary, from the fact that to be a dentist will be honor *par excellence.*

This cannot be whilst diplomas may be granted by any ten men who have influence enough, or money enough, to obtain a charter from a corrupt or corruptible legislature. This cannot be whilst the men who grant degrees, are winning dollars in proportion to the number of men passed. This cannot be whilst the colleges set their own standards, even though they honestly live up to them. Such standards are necessarily influenced by environment; therefore the graduate of one college is the superior of those from another school, apart from individual excellence. The time must

come when a dentist will be a dentist. In that day the dentist in California will be the same as the practitioner on the Atlantic coast or on the Mississippi. In that day the dentist will not be a specialist in medicine, because he will know all that his medical brother has learned and something more. He will be an oral surgeon in all that the words can be made to imply.

But this you say is Utopia! How is all this to be accomplished? I cannot tell you, but I can suggest a method which will lead us in the right direction.

A year ago it seemed to me that I had found the solution to the educational problem. I studied and elaborated my scheme till, at last, in the January number of the *Review*, appeared my monograph entitled "Looking Forward." This contained a description of that which you say is Utopia. As I have said, the single publication of an idea attracts little attention. It was not a part of my plan, however, to let the matter rest with this one article. In that I described the ultimatum. It remains to show the means by which we may attain it.

I had reprints made which I sent to leading men, at home and abroad, asking for a reply expressing an opinion as to the desirability of the change which I advocated. I will give you quotations from a few of the letters which have reached me, which will emphasize the fact that the present system is considered inadequate. But first I must quote from "Looking Forward."

The following conversation is supposed to have occurred in the year 2000:

"Yes," said I, "I can remember that there were a large number of colleges and considerable competition between them. The number of graduates was enormous."

"Exactly. There was great competition. There were too many schools, and the result was that men were graduated who were not sufficiently qualified. The colleges were forced to do this that they might attract students. Finally, the several States began to protect themselves with prohibitory laws. State Boards of Examiners were created with power to confer degrees and to control the practice of dentistry in their localities. Massachusetts, even made it compulsory for a man to obtain her special degree. It was obnoxious for a man graduated by a college to be compelled to submit to a second examination before he was allowed to practice. Yet the law was meant to force a higher standard on the colleges.

Thus degrees were multiplied and each State had a separate dental law. In the United States Congress, which met in 1924, a new era dawned. At last it was seen that the sovereignty of the States on certain questions was a menace to the integrity of the Union as a nation. Amendments to the constitution were recommended, and finally adopted, which enacted national laws on many questions, repealing the existing State laws. The most important of these laws were in relation to marriage and divorce. There were a number of others, and among these were laws regulating the practice of medicine and dentistry."

"You mean that there is now a national law regulating the practice of dentistry?"

"Exactly. It is brief and effective. No man may practice in the United States unless he holds a degree conferred by the National University. That is D. O. S.—Doctor of Oral Surgery. It was deemed advisable to make the degree a new one, that the law could be better enforced."

"But," said I, "since there can be but one university, it seems unjust to compel attendance from distant localities."

"You do not grasp the idea. The colleges continue to exist as heretofore. They are the schools. A student attends a course covering three full years. If he passes the examination at his college, a certificate is accorded to him which entitles him to attend the University examination."

"He is not admitted at once, then?"

"Of course not. In that case the standard of excellence in the colleges could not be controlled. No, he must be examined before entering the University. If he passes, he attends a course of lectures covering six weeks, and is then examined for his degree."

"There is still the objection which I raised. The student from a distance is not on an equality with those living near by."

"The certificate granted by the college entitles the student to free passage by rail and return, to and from the University town. Of course this is simple since the Government bought out and controls all railroads."

"Suppose that a man does not pass either of these examinations?"

"In either case he is returned to the college. And, as the college was evidently at fault in granting its certificate to an incompetent man, it is compulsory on them to receive him for a fourth

term without fee. This is a further incentive to make the colleges strict."

Doctor Louis Ottofy follows my example and dates his reply 1990, or one hundred years ahead. He says:

"The subject of education is under the immediate control of the Minister of Education—the Secretary of Education, who is a member of the President's cabinet, ranking third in the order of precedence, the Secretaries of State and of the Treasury outranking him. The entire educational system is under his control. A constitutional amendment, ratified by all the States, having voluntarily yielded this part of the sovereignty of the States to the general Government for the general good. There is a National University at Washington and a State University in each State. Departments of each State University are established in different cities according to the location where the best results may be derived. In this way it happens that the Agricultural Department of the University of Illinois is located at Podunk, while the dental and medical schools are at Chicago. The Secretary of Education will permit the establishment of only the number of schools necessary for each profession. In 1990 there are five dental schools—in San Francisco, Chicago, Boston, Washington and New Orleans.

The Board of Examiners, consisting of five, conduct the examinations, one at each school, at the same time. Nothing less than the B. A., or its equivalent education, will admit a student to the State University, and he must have devoted at least one year to manual training."

The doctor does not exactly explain the working of the National University, but I suppose he means the classes there to be made of graduates from the State Universities, in which case it would be a sort of post-graduate course for the men who are really anxious to become fully educated. Such a system as Dr. Ottofy describes is devoutly to be wished for, but a national public school system is in the dim future.

Dr. G. V. Black writes:

"Perhaps the matter of dental education will never be entirely satisfactory to those of us who make an earnest effort to push it forward. *Certainly it will not while the qualifications of the pupils, both for entrance and exit, are controlled by that circular God with the eagle stamped on the reverse side. I have become satisfied that it would be best for all concerned, if the final examinations were controlled by a board free from that kind of influence.*"

Dr. J. Allen Osmun writes:

"In reading your article 'Looking Forward' I am more than ever impressed with the fact that some scheme of universal application is urgently needed, in order to equalize the various laws now existing in relation to the practice of dentistry." * * * * "It would a grand thing for the dental profession if something definite could be brought about so that *all graduates should stand on an equal footing.*"

Dr. C. N. Peirce writes:

"I fully sympathize with your idea that *we shall never have a satisfactory standard of efficiency until we have a national—a single body—upon whom shall devolve the responsibility and power of conferring the degree which shall represent that standard.*" "Your Dental University nicely covers the idea. The school, or rather the faculties that teach, must be deprived of the power of granting degrees. To reach the ideal it must be done by an impartial body who knows the applicant only through his qualifications, and without reference to where he has been educated."

The following letter is of great interest, because it gives us an idea of how our college system is considered abroad. It is from Dr. A. C. Hugenschmidt, of Paris, well known here through his writings in the journals.

"I am very glad to see that an American citizen, and a member of our profession, should have indicated that it is time to call a halt to the manufacture of D. D. S. by the cart load, as is done by certain colleges in the United States, without sufficient consideration of the baggage of scientific knowledge possessed by those who are armed with this degree. The American diplomas of D. D. S. had attached to them a well deserved reputation throughout Europe, until within the past few years, when it was observed that those who went to the United States, for the purpose of acquiring an American degree, could return to their respective countries after attending a course of a few months at one of your second class colleges, bringing back with them an amount of knowledge much inferior to what had always been expected from one who possessed an American dental degree.

"From that time the reputation of American dental diplomas began to be dimmed, and a year ago Germany passed a regulation by which the possessors of American diplomas are considered inferior to those who had obtained certificates from the German Universities.

"One trouble is that many of your colleges seem anxious to boast of a large number of diplomas granted. They make no mention of the number of rejected candidates. I, certainly, for my modest part, *would think a thousand times more of a college which could say that out of sixty candidates who presented themselves for examination, twenty had been rejected for insufficient preparation, than I should of an institution which should advertise to the world a long list of graduates, with none, or scarcely any, who had failed to pass.* One does its work properly and the other improperly. One gives to the world practitioners who are able to maintain the reputation of the profession, and the honor of their Alma Mater. The other allows men to go out amongst the people insufficiently trained to do their work, many of whom sooner or later become not only a disgrace to our profession, but a menace to the community.

"Whilst in America I heard that in a certain school, foreigners were allowed to obtain a diploma without knowing sufficient of the language to understand the lectures; and what seems worse, that in the examination rooms the questions and answers were translated by the "quiz-master" who had prepared the student for these examinations.

"Certainly, as you wisely propose, the only way to suppress these abuses, would be by the founding of a national dental university, which should be the only institution having the power to deliver the official diploma, which would allow a man to practice in all parts of the United States."

Dr. Hugenschmidt continues his letter, giving a description of a method by which the dental schools might agree to accept examination papers supplied by a national convention, the replies to be written in the presence of an officer of the convention, and returned to a national examining board, who shall decide who are entitled to diplomas. He says that this is successfully done in some of the art universities in France. I do not give this in all the detail which the doctor has kindly supplied, because the colleges, as he suggests, would need to voluntarily cede to the national board this right to examine their students, which they would either decline to do at the outset, or any college might determine to withdraw from the agreement subsequently.

The question then recurs: If the voice of the profession is universally favorable to a higher standard, how are we to reach it?

The salient objections to the present system are these:

(*a*) Each school erects a standard of its own, intentionally or unintentionally, influenced by self-interest. The school depending for income and profit upon the number of matriculants, is apt to admit men easily. The attraction, to a large number of men being the chances of easy graduation, it is to the advantage of the school to graduate as many as possible.

(*b*) The professors in many schools, instead of receiving fixed remuneration for their services, are directly interested in the conduct (commercially) of the institution, owning stock and drawing a share of the profits. Thus they are benefited by the results of objection "*a*".

(*c*) In many schools the junior and senior classes receive instruction together, listening to the same lectures. This saves the professors from preparing and delivering two sets of lectures, one primary and the other advanced. The result is that much of the first year is wasted, because technical terms are used which can only be intelligible to the advanced student.

(*d*) In many of the colleges the students are under the guidance of only one or two preceptors in each department. The result is that with large classes, only the insistant student can demand, and obtain, proper instruction from the preceptor. A

student with this quality of insistance is probably a man who will eventually learn without instruction, but by demanding what is his just right, due attention from the teacher, the duller student receives even less attention.

If we could deprive the schools of the right to grant diplomas most of these objections would cease to exist. The school becoming merely educational in its purport, with a standard, erected by an independant body, which must be reached by its students before diplomas are granted, that very *self-interest, at present operating insidiously against high education, would be the most potent factor toward increasing the facilities for acquiring knowledge.* The first year after enactment of such a law, there would at once appear the difference in the educational advantages of the institutions. Each of ten colleges sending up a hundred men, let us say, a different number would be passed in each case. Suppose that the graduates credited to each of these colleges should happen to be 83, 81, 80, 73, 71, 70, 65, 60, 50, and 40. It would be obvious at once that the three colleges passing over 80 per cent of its students possessed the best method of instructing students. That the three passing over 70 per cent were good colleges, the low percentage possibly depending on the mental grasp of the students. That the colleges passing respectively 60 and 50 per cent of its men were second class institutions, and that the college passing but 40 per cent was but a poor apology for a school. We would have a basis of comparison of the work of the schools and the students would, through *self-interest* be attracted to that institution which offered the best chance of learning enough to pass the final examination. Thus the colleges, driven by lack of patronage would be compelled, again through *self-interest*, to increase their regimen and improve their facilities. The 70 per cent schools would be more strict with its iniatory examinations. The fifty per cent schools would engage better teachers, and the forty per cent school would go out of existance, if it could not make a better showing within a reasonable period.

All this you must admit. Still though you agree that a National University is a thing to be desired, you point out the fact that it will require National and State legislation, and at best cannot be hoped for within this century.

Must we therefore remain quiescent awaiting the desirable but not expecting attainment? If we do so, and our children do like-

wise, how will accomplishment ever be reached by our profession? An energy must be inaugurated which shall eventually bring about the thing desired even though it require half a century in its operation.

I believe that it is within the power of this body to start a scheme which will overturn the present system of colleges, and better it within twenty years. This is my plan:

Granted that we cannot at a bound inaugurate a National University, and compel the colleges to submit their students for examination. We can, however, without asking any power (or if need be, we should be able to obtain special permission from the United States government) we can, I say, create a *National Degree.*

Having obtained a special degree from Congress, if need be, this body shall then proceed to select from its members, or from the profession at large, twenty men, who shall constitute the *National Board of Examiners.* These men shall be residents of all parts of the United States for reasons which will be assigned. They shall have the power to confer a degree to be known as D. O. S., *Doctor of Oral Surgery.* This degree must not be D. D. S. because the public is to be instructed as hereafter described, that the national degree is higher than a college diploma.

This national board shall meet alternately on the Atlantic coast, along the Mississippi, and on the Pacific, once annually. On these occasions they shall examine candidates and confer the national degree. Any one shall be elligible to examination whether he be a college graduate or not. This will at once show that the college is counted merely as educational. If a man can acquire knowledge without the college, there should be no reason for forcing him into a school. The theoretical examinations shall be in writing, and the practical examinations shall be through clinics. Each examiner shall have the privilege of rating his candidate by per cent, this allowing more accuracy than the voting system. For example, in the written examinations there should be *one hundred questions* on each subject, each answer being worth one per cent. In the practical there might be twenty tests each worth five. It should require a mean average of 80 per cent. to pass.

There should be a fee attached to the granting of the diploma which should go into the treasury of the board of examiners. This fee should be variable according to which section the candidate resides in. For example, should the fee be $30 it should be

charged to those on the Atlantic slope when the board meets in that section. At these times the Mississippi valley men would pay $20, and those from the Pacific section $10. The reverse would hold when the board meets on the Pacific; but when the meeting is on the Mississippi those from either coast would pay $20 and the Mississippi men the full fee.

This would be a slight concession to those traveling long distances, but there is another provision which is intended to meet the cases where the expense of travel would be prohibitory. Still it must be remembered that a man would wait only three years before the board would meet in his section, and only one or two before it would meet in the section least distant from him. However, supposing that a man desires to be examined and does not wish to travel. In such a case the candidate must notify the examiner living nearest to him. This notification is read before the next full board. Immediately after the convention, each examiner must present a written copy of the questions to be used by him in his examinations, which must be approved by the vote of the whole board. This done they are printed on slips. A set of these printed slips may be entrusted to the examiner presenting the name of the candidate who wishes a special examination. Upon the return of said examiner to his home, he is to summon the candidate to his office, where under his eyes the replies to the questions on the slips are to be written. After which, each slip must be mailed to the individual examiner of each specialty, who in the usual way will rate the candidate and forward the slip with his rating to the proper officer of the board, who shall figure up the percentage and announce whether the candidate has passed. If he is passed he must wait for his diploma until the board's next meeting that the examiners may conveniently sign the diploma; but a certificate may be issued in the interim.

The candidate must also submit to the regular practical examination, as much of his work as possible being sent to the proper examiner of that department. The fee for this special examination shall be double the regular fee.

If this association would inaugurate such a system as this what would be the result? It would become necessary to adopt some method of constantly keeping before the public, through the secular press, the fact that there is a high standard of dental efficiency which is represented by the degree D. O. S. Once this were wide-

ly understood, the better class of patients would seek the D. O. S., and consequently the D. O. S. diploma would be sought by students. Many men who delight in many degrees would obtain the D. D. S. and then apply to the national board for the special degree. Thus in a brief number of years we would find graduates from the various colleges applying to the National Board, and by publishing in our journals the results and percentages of graduates from each college, *we would shortly reach that point where the self-interest of the college would compel it to prepare its men with special design that they should be able to pass the National Board. They would begin to boast, not of how many men graduated from their private schools, but rather as to the number of their graduates who had succeeded in obtaining the National Board's degree.* Immediately thereafter some school, bolder, or richer, or better equipped, than the others, would apply to the National Board requesting that the Board should undertake the examining of its men altogether. That would be the dawn of a new era. The millenium would be at hand. Dentistry would be a profession and no longer a specialty. The step towards a university would be easily taken.

It may be questioned whether this National Board special degree would have the effect predicted. I can offer proof by pointing out the work done by the State Board of Censors, New York.

When it was announced that they had obtained legistative permission and authority to examine men and grant degrees, certain men interested in colleges at once set up the cry that this was to be a white-washing board: that the whole thing would be a farce.

The degree has been in operation since 1870. Beginning with that year up to date, there have been 210 men examined, of which number the degree has been conferred upon 103, less than fifty per cent. These figures show that the work has been conscientiously done and that the board has not whitewashed any one. After a few years it began to be observed that the M. D. S. was difficult to obtain, rather than otherwise, and it was coveted by some graduates. Of graduates, 25 have applied, 22 being successful. The three who failed, though a small number, is a large percentage, 12 per cent. *If twelve per cent of all the college graduates are incompetent, we readily see how it is that there are so many charlatans, advertising men, whom we cannot legally drive out of the community, because they hold diplomas.*

But when we consider that these three men *voluntarily* went through this ordeal, we see at once that were all graduates *forced to submit to a supplementary examination, the percentage of failures would be nearer twenty than twelve.*

All of which emphasizes the fact that we need some method of raising the standard now held by the colleges. If we cannot do so by legal enactment, perhaps we can by moral force. We have seen that Massachusetts and New Jersey have passed laws creating a board of examiners which has the right to examine even a college graduate before granting a license to practice. If such a law were made in all States and the National Board were so conducted that the State Boards could say, "*We will grant licenses to the holders of the national degree without examination,*" see what a power for good the National Board of Examiners would be.

Gentlemen, I have done. God speed the day when we can be proud of our profession, because of the fact that only the highly gifted can enter it.

The following are the departments suggested for examination:

GENERAL.

1. Anatomy.
2. Physiology.
3. Pathology.
4. Histology.
5. Chemistry.
6. Materia Medica.
7. Therapeutics.
8. Bacteriology.
9. Metallurgy.
10. Microscopy.

SPECIALLY DENTAL.

11. Methods and materials for filling teeth.
12. Diseases and treatment of the teeth.
13. Diseases and treatment of gums and processes.
14. Oral surgery.
15. Embriology, origin and formation of the teeth.
16. Treatment of cleft palates, and restoration of lost parts.
17. Diseases in the oral cavity requiring constitutional treatment, resulting from or causing constitutional disturbance.
18. Prosthetic dentistry.
19. Orthodontia.
20. Crown and bridge work.

DISCUSSION.

DR. NOBLE: We have been trying to get a law passed by Congress, for the District of Columbia, and we found in looking over the laws of the different States how greatly they vary, and so came to realize the importance of their unification. We have been working to secure legislation in the District of Columbia for years and have not yet succeeded. We have a bill now before Congress, and if any of you have any influence with your congressmen we want you to help us at this time, otherwise we are not likely to succeed.

Dr. Peirce's reference to having a National Board, seems to me an excellent suggestion. We have got to come to the point of having not only our State laws in uniformity, but our colleges all in proper shape, and the best means to accomplish this would be, I think, through a National Board. If we can bring this about, our State laws must be so framed that a degree coming from the National Board would be sufficient in all the States without a re-examination.

The paper read before one of the New York societies, by Dr. Shepard, on this subject was very good, and I hope there will be some definite action taken at this meeting.

Dr. Peirce's report referred to the fact that very few of the States were represented at our meetings. I have followed this association with a great deal of interest and faithfulness since its meeting at White Sulphur Springs, and have been very sorry to see no greater national representation, and to feel that we did not succeed in making it of sufficient interest to call delegates here from every one of our States, thus making it a truly representative body. There is something that is not right, and I know there are many things that can be improved in the way of getting down to work. If, as Dr. Peirce suggests, we should require each delegate that presents himself here before the society to make a report of the work done by and the condition of the society that he represents, or the societies in his neighborhood, it might be very advantageous. I don't know that I have anything definite in that direction to suggest, but something should be done so that when we come together we may be able to learn what has been done in all parts of the country during the year.

I have heard many papers here which might profitably have been read to students, but we old fellows don't want any more of that

sort of pabulum. If there is anything new that will interest, instruct and spur us on and bring us to a higher plane, that we want; but we do not care to waste our time on teachings, such as have just been referred to.

DR. E. PARMLY BROWN: The question of the unification of the dental laws of this great nation, composed of forty-nine states and territories, is a very important one. I have been in the habit of telling in this country and abroad that the American Dental Association stands pre-eminently ahead of anything on the face of the earth in the way of a dental organization. It is an assertion that no one has ever dared to contradict, and if this subject is to be acted on by this body, and a committee is to be appointed, it should not be given a month or a year, but five years in which to accomplish their work. Is this a union? Not by a long shot. If we have forty-nine dental laws, each differing from all the others, we can imagine what the condition of affairs must be. I have been in dentistry all my life, but if I were to go to the State of New Jersey tomorrow to practice I should have to stand an examination before a lot of my boys, as I call them; men that I have made dentists of; to go before my children and grandchildren and great-grandchildren and have them ask me questions. They could ask them and I should fail, according to their law, but I can take over into the State of New Jersey a little boy seven years old, who will ask all the boards of examiners in this country ten questions and they will not answer more than one of them. I want but ten minutes to coach him.

If this association would compile from all the State laws a law that they considered good and recommend the same, it would have some weight.

The State of New Jersey says that a man having a half dozen diplomas, who has been practicing for over a quarter of a century, and who comes within their borders, must go before their board and answer a lot of questions which he has forgotten before many of them were born. That is simply nonsense. What is it done for? To keep good men away, to keep men from coming into their State so that they would have the whole of that territory that separates New York from Philadelphia.

DR. STOCKTON: For a long time ministers, lawyers and philanthropists have been endeavoring to make a uniform law for the States in regard to marriage, but so far have failed. So it would be

in regard to the unification of the laws relating to dentistry. It will probably take the committee that shall be appointed to make a uniform law for all the States, more than five years to accomplish the task, and when the committee have framed the law to their satisfaction, it will take an almost indefinite time for them to get it through all the legislatures of the States. Those of you who have done any work with the legislatures know how difficult it is. Dental legislation has been quite phenomenal in New Jersey. Some few years ago there was no law. Then a law was enacted that there must be an examination of all not graduates before a board of examiners. That helped dentistry in New Jersey very greatly. The State society also helped it very much. Then an attempt was made to pass a law that would confer a State degree under which the recipient could practice. Fortunately for dentistry, fortunately for New Jersey more particularly, that bill did not become a law. The very gentlemen who wanted it to go through are glad now that it did not. And now, as Dr. Brown has said, there is a law in the State of New Jersey that no one can practice dentistry unless he goes before the board of examiners, no matter how many degrees he may have or where they come from. Now you may think from what my friend Dr. Brown has said, that if in the providence of good luck, my friend here, the father of dentistry (Dr. Atkinson), should come to New Jersey, that he would not be allowed to practice dentistry without an examination. Do you suppose for one moment that that was the intention of the law of New Jersey? No. Father Atkinson can come to New Jersey and practice as long as he lives, and so can any man who is *qualified* to do so, but that law was passed in order that men, coming from colleges either with or without diplomas—unqualified—may be stopped at our threshold.

I have in my mind now a gentleman who graduated from one of the most prominent dental and medical colleges of this country and who stood 100 in every department. He was clear up, and knew as much apparently as a young man could learn, yet when a hard rubber plate with a bicuspid tooth broken off was to be repaired, and he was told by his principal to put on a cuspid tooth and build up the inside cusp with rubber, he did not know how to do this, one of the simplest things in dentistry.

I would say in closing, in regard to the working of the law in New Jersey, that the law has done much for dentistry. It has come up from the low state in which it was years ago to the height

which it occupies to-day. Its State society and its dental laws, I think, have been the factors which have worked the change. Those who have attended our conventions will acknowledge that dentistry has attained as high a standard in New Jersey as in any other State in the union.

One word in regard to the working of the sections. It has been suggested by the president that a committee be appointed to formulate some plan that shall lead to improvement in this direction. We have found for the last two years in our State society a plan that has worked admirably. When any gentleman consents to read a paper before our State society, we exact that if possible three months previous to the time of its being read it shall be in the hands of the committee or the secretary. That committee selects one, two or three to read the paper, and to write another paper upon the paper submitted. If that system could be inaugurated here in our section work, and papers that come before the section were presented to those throughout the country who are familiar with the particular subjects treated of for revision and criticism, we should have something worthy of the work of the sections.

Dr. A. Wilkes Smith (of Kentucky). In regard to the unification of the dental laws, I would say that I do not think dental legislation will make dentists more proficient in their calling. I am in favor of very little legislation, just enough to draw the line of demarkation between the professional gentleman and the pretender. If it were possible to get together a large representative association I think that this might be accomplished.

With regard to securing a larger attendance upon this body, we know that many of the men that come here, come at a great sacrifice, and if this body were to send a recommendation to the various State associations suggesting that they appropriate a fund for the defraying of the expenses of delegates, I believe we should in a very short time have our association well represented.

Dr. Crawford: I am very much interested in this subject. I think my friend, Dr. Smith, is to a great extent right. It is questionable in my mind whether much of the discussion that we have had upon the subject of dental education has been conducive of good. If we go on in the line we have been following, in my judgment we shall reach such an extreme ultimately that a reaction will take place. Perhaps it would be well for us to ask ourselves a question or two: and I ask this intelligent body, has the aggre-

gate of the results, not only to the dental profession but to the whole people—of all this turmoil and discussion and work that we have done—added very much to our progress? I am sorry to say that I live in a State that has no law regulating the practice of dentistry, and in traveling over this grand country of ours I am forced to say that, in my judgment, there is scarcely a difference in the appearance of things in States that have laws and States that have no laws at all. The main point of this question has been lost sight of, that the principle good that is to come to the whole people involved, is through the moral force of the laws, and, therefore, the simpler the laws the nearer we shall be right. I labored for eight years upon a committee asking our State to give us the simplest law regulating practice. At the end of that time I told our legislature we would turn the matter entirely over to them, and I am satisfied for the next few years, at least, the dental profession in the State of Tennessee will have nothing to do with the question of legislation. If we have laws on this subject in the various States they should be in harmony with what is right, just and courteous in their application, and they should conform to the advanced thought of the day. We should follow the example set us by the legal profession.

If a young man, from whatever station in life he may occupy, makes himself competent to enter the legal profession, he receives a license; if he goes into another State than the one in which his license was granted and presents his credentials from the proper authority, the judge upon the bench says, "Mr. Sheriff, furnish the gentleman a seat." I want to ask the honored members of this society who have been more than thirty years in practice, how many of them could stand a 75 per cent examination before any State Board? And yet you would deprive competent men of the privilege of practice. When the great State of New York grants a man a license to practice dentistry, that license should stand for all time unless the man receiving it is guilty of a violation of the code of ethics. Show me a man who will openly violate the code of ethics and you may make all the laws in the world, and that man will ultimately disgrace himself and bring reproach upon the profession to which he belongs. Extracting teeth for twenty-five cents! O, my God! In Tennessee I believe there is a smaller number of men who will perform the operation of extracting teeth for a quarter of a dollar, than in any other State in the Union, and

we have no law. Talk about education! We want to educate men in the dental profession up to the proper consideration of the moral obligations under which they rest.

Let us have a uniform law, but let us be kind and good, and encouraging to the young and the poor men, and help them; for God knows we have not got enough dentists in this country. There is a fear in the minds of the dental profession that we are going to be overrun. We have not got enough dentists in America. This is no "pent up Utica." Dentistry means something to America. We are passing all other nations. America can make a better dentist in three years than all Europe can in ten. She has done it. She has made the best doctors in the world, and the best lawyers in the world. Mr. Gladstone nearly a quarter of a century ago in the British Parliament said, "Look at America, she will pass you in a canter." We have already done so.

DR. STOREY: I do not propose to charm you with the eloquence of a Crawford, but I do propose to ask my friend Dr. Stocton if the principal instructed the young man how to put on a canine tooth or a cuspid instead of a bicuspid? Did he show him how? If he did, then I should say, the young man was capable of practicing dentistry even in New Jersey, for he had learned everything else except that one thing.

In the matter of dental laws and dental examining boards I am glad to see that the American Dental Association has taken a high stand. It affords me a gratification I have rarely experienced, for it is on the right track. Coming as I do from the grand dumping ground of the United States, where all the dental garbage of the world is thrown upon us, where no law can be enacted that is originally gotten up by any man who puts on a clean shirt twice a week, I realize the real condition of things. We have a law in my State which says that the judge of each Judicial District shall appoint a Dental Examining Board, to consist of three reputable dentists, the judge to decide upon the reputability of those dentists. There are forty-seven Judicial Districts in the State of Texas. Three times forty-seven would be 141 reputable dentists to constitute the examining board. I assert without the fear of contradiction that there are not half that many in the State of Texas. If we could secure a uniform dental law in the United States, one that would cover the ground and be equitable and advantageous to us all, it would be the grandest achievement that the American Den-

tal Association has ever set on foot. In the matter of dental education, what a commentary these dental examining boards are upon our dental colleges. I suppose there were probably seven or eight hundred men graduated last term from the colleges. I think the language used in conferring the degree is, that they are constituted Doctors of Dental Surgery with all the rights and privileges—to do what? To go before a dental examining board and ascertain whether they are competent to practice dentistry. If I were a member of a faculty I would resign immediately when the first examining board was appointed and one of the students that I had passed upon had to go before that examining board. I would not give two bits for any dental diploma from any dental college in the United States if it only allows me the privilege of going before a dental examining board and being examined, in all probability by men who had never seen the inside of a dental college, or a medical college either, and who are as innocent of a knowledge of the great fundamental principles which underlie the science of medicine as ignorance well can be; who have been appointed to office rather on account of political preferment than scientific attainment.

These are facts. I am not guessing at anything. Political preferment, instead of scientific attainment, gets them upon the examining board, and men, as my friend Dr. Brown said a while ago, men who have forgotten more than the boards ever knew have to go before those boards, though carrying two or three diplomas, to be examined. There is great injustice in these laws, and unless we can manage to unify them, I suppose they will always exist. But a progress in that direction has been made in the American Dental Association to-day, and I hope that it will succeed in correcting the evil, and that a conference can be secured throughout all the States and with our members in Congress. I could not do anything in our legislature, because it is a regular Hayseed, and it won't do anything; but if we can get the matter before Congress in the proper shape, it will be a national cause. You cannot get forty-nine States to agree to anything. They will say to you what suits New Jersey does not suit Texas, even if it is a law regulating a profession. But I think the whole of dental legislation is a grand mistake. If a diploma from a dental college means anything at all it means that the holder is competent to practice dentistry. I am democratic enough in my views to allow anybody to practice dentistry who wants to, though I think the better he is educated the

better he is prepared for it; but a diploma from any dental college should be a pass-port to any man who carries it into any State. The dental colleges should place their standard high enough. Time should not be the requisite for graduation in any school, but knowledge. Let the schools place their standard high enough, and when the student reaches it, and satisfies the faculty that he has reached it, give him a diploma; but do not give it to him until he does reach it, though he may have grown gray in its pursuit. Then that diploma should be a passport to him anywhere. You will have no use for dental examining boards. You will have no use for all this talk we have had to-day, for then we would all pull together in unity. The barn-door advertisements that I see constantly in my State, by which they advertise "to extract teeth without pain, gold crowns for fifty cents," and all that sort of thing, often contain something like the following: "Graduates of the Baltimore College; graduates of the Philadelphia Dental College; graduates of the Cincinnati College; graduates of the Vanderbilt University, all work for me in this office."

DR. ALLPORT: My friend Dr. Storey says that a diploma from any dental college should be a passport to practice dentistry anywhere. So it should be, and were all of our dental colleges what they ought to be, it would be. But many of them are not, and we know it.

We know too, that a large majority of the diplomas that have been issued by this class of colleges, are no more an indication of their holders' qualifications to practice dentistry, than would be so many pieces of brown paper. And it is well known too, that many of the teachers in these colleges are not qualified to properly practice what they assume to teach. It is necessary, therefore, that we have these State Dental Examining Boards, whose duty it is made to inquire into the quality of teaching done in our respective colleges and determine as to the significance and value of the diplomas that they issue, as well as to the qualifications of those not graduates who propose to enter upon the practice of dentistry in our respective States.

Were it not for these boards the diplomas of one college would be of the same legal significance as another. Take, for instance, the State of Illinois. In the city of Chicago, we have between thirty and forty regularly incorporated dental colleges.

DR. BALDWIN: Twenty.

DR. ALLPORT: We will say twenty, then. According to the laws of our State, every one of these colleges has the same legal right to issue diplomas as has the Harvard, the University of Pennsylvania, the Chicago Dental College, or the University Dental College of Chicago, and, but for the power given to our State Dental Boards to determine as to the respectability of these respective colleges, the diplomas of any of them would give their holders the legal right to practice dentistry in the State of Illinois.

Under the general incorporation law of Illinois the requirements to obtain a charter for a dental college with the right to issue diplomas of qualifications to practice dentistry, are for three men to band themselves together and send three dollars to our Secretary of State and ask permission to incorporate and organize a dental college. A permit will be returned, no matter whether the proposed incorporators know anything about dentistry or not.

Our State Board is the only protection that the people have to secure them against graduates of these dishonest concerns, and honest colleges should regard our State Dental Boards as their best friends.

Could we have a unification of the dental laws throughout the different States, as has been suggested, it would no doubt be a good thing, but so long as each State acts independently of the others, I do not see how this can well be secured through the State Legislatures, nor could it be done by an act of congress, for the constitution of the United States gives to each State the right to regulate all such matters as it deems fit. But our National Association of Dental Examining Boards can, by agreement between the various State Boards, make themselves almost as powerful and useful as would an act of congress or a unification of our State laws upon the subject.

I can see, as Dr. Brown says, that in some cases it would be a seeming hardship for well known qualified practitioners to be obliged to be examined by a State Board, before they could practice in a particular State. But for the good of all, such a law is not without merit, for no one should be allowed to practice in any State unless the State Board was satisfied that they were qualified to do so. But no sensible board would deem it necessary to enter into a critical examination of Dr. Atkinson or Dr. Storey before allowing them to practice within their State.

The law only requires that the State Board shall be satisfied

that applicants are qualified to practice, and no need for an examination exists when the applicant is known to be qualified. It is not always the letter but the spirit of the law that should be complied with.

In reference to what Dr. Noble has said about urging our representatives to vote for the bill now pending before congress to regulate the practice of dentistry in the District of Columbia, it seems to me that it would be a very good thing to do, and I would be willing to do what I could in that direction. But it has occurred to me that a better thing would be for this association to pass a resolution requesting congress to pass the bill now pending before it on this subject. It seems to me that a resolution of this kind from the American Dental Association could but be treated with respect and consideration.

DR. GODDARD: I am greatly in favor of unification of dental laws. I do not know that it can ever be done except by an act of congress. The attempt has been made to secure a universal dental law. Several years ago the National Association of Dental Examiners framed a law and sent it to the different states advising that this law be adopted. The law we had passed in California is almost exactly the same as that devised by the National Association. There can, however, be no unification of dental laws by State legislatures, because our ideas grow. Since that law was devised by the National Association of Examiners, our ideas have grown; more is wanted than was wanted then, and laws that have been passed in other States since that time are in advance of our law. I see no way of getting a uniform law except by action of the United States Congress. The interpretation of the law lies with the State Boards of Examiners. The Boards have the power in some States to grant licenses to those who have diplomas from reputable colleges. That is the condition of our law. All others must be examined. The severity of the examinations rests with the State Board. Some complain that the State Boards have raised the standard too high, when they insist that all graduates must be examined. Our State Board seems to have been rather too lenient in granting permanent licenses to students in actual attendance at colleges.

THE PRESIDENT: The subject of the unification of the dental laws has been turned over to a committee. The subject before

the association is dental education, and the papers that were read last night, instead of the unification of the dental laws.

DR. P. T. SMITH: The paper that was read by Dr. Atkinson, goes into a deep substatum of mental growth; I may say too far beyond our comprehension to grasp readily and favorably; yet the greater strain we place ourselves under for the reaching of these beneficial forces and conditions, the faster we will grow mentally, therefore I very much approve of such papers being read. The paper that was read by Dr. Thompson, was full of acceptable science and euphonious beauty. To the lover of science and literature it met the full measure of high expectations. It was a lullaby to the listening enthusiast; but there were no doubtful borderings invaded, no uncertain hypothesis ventured.

While we are in the youth of our profession we must recognize this duty for ourselves—that we must be aggressive. Let us take Dr. Atkinson's position. He aims to establish something that is at the foundation of the whole study and acquirement that we need. It reflects the root and support of science, and unless we have the basal principles shown and digested, how can we build our house? Without these our superstructure must fall. We should encourage a more close attention to the mental conditions of mankind. We represent simply a manipulating quality as dentists; we ask questions as to the principles underlying all of our operations to get at the best methods that we can. What gives the shock? What gives mal-development? What causes the difficulties that beset the suffering people who apply to us for our assistance? Not one of these questions can be intelligently answered, because we in the first place have not gone deep enough; we have ignored the basal principles that underlie our art.

There is a duality existing in mankind which we ought to study. The operation of mental forces is beyond our reach. We have never yet pretended or expected to invade that great field that is so hard to comprehend, but we cannot educate people except through this force. We have to make ourselves acquainted with it and to understand the domain of the two fields. If we could live according to the harmony that is prescribed by the closest investigations of this metaphysical force, we would have no disease. This is not an eccentric idea, it is simply a fact that science will bear us out in and is something that we ought to understand. If we study the text books of to-day we are kept within the small circle of the

physical organism, and if we step outside of that we are hooted at, and do not dare to go any further than we have been taught. We must open up new fields and reach over into that which we call the unknown, in order to prepare ourselves for the next higher step.

In the formation of organic bodies we have, as I said, a duality, and no substance can grow, even a mineral, without there is a positive and a negative force to operate together, and it is by these means that we have the most complex structures produced, and it is the composition of the elements on both sides that produce the results observable.

(The speaker illustrated upon the board his theories in reference to the positive and negative forces).

If you have a healthy physical organism you must have the proper physical surroundings, and you cannot have a proper physical development unless you have a favorable mental condition—the two elemental substances harmonizing exactly in their combination.

Dr. TRUMAN: The subject of discussion this morning is to my mind one of the very greatest importance. Certainly no other could claim the attention of this association of more value. We are at the present time, in my judgment, in a transitional state. We are passing from the period without law to that when we are likely to be governed, and in a measure to be injured, by law. The members of this profession must remember that there is danger in tampering too much with legal processes. There is a risk not only to this profession, but there is a danger to the liberties of every individual in this country. Those of us who have had the iron enter our souls under the old effete governments of Europe, know very well what it means to be ground down by enactments, and law necessarily is as much of a monarch as a king on his throne. It is time for us to think of these things.

I am not opposed individually to dental laws; but when they are as we have them, the request for their unification becomes imperative. If there is a law, as has been stated, in one State, that requires of every individual, whether he be a graduate or whether he be not, whether he has been in practice twenty-five years or one, that he must go before a board of examiners and pay a fee of twenty-five dollars for that examination, before he can practice dentistry, it is time we called a halt in this matter. (Applause).

It will never do to take that position. Laws, as has been well stated here, are for the benefit of the people. When they become

tyrannical and insist upon having us do more than we can possibly attend to, then it is best they should be repealed. Having been an educator for many years I am naturally brought in contact and in sympathy with students, and I am not prepared to assist in making it so difficult for them that they will be unable to enter the profession except they go through a course that will really be an injury to them.

What is the difference between the general modes of education? We are passing into another system of training mind. We are obliged to accept the world as described by Dr. Thompson in his very able paper, which I cannot regard in the same light as viewed by Dr. Smith. The writer struck some profound principles in educational matters. It is true that we have had a great deal of the didactic in teaching. It is very true that professors may have repeatedly delivered lecture after lecture, year after year, from manuscript as originally prepared, but that this is a wrong mode needs no argument. There will never be much accomplished by placing an iron partition, as a written lecture, between teacher and student. Every one fitted to train students should be able to stand before them and explain the principles as he understands them, and if he is not capable of thus doing he is not fitted for the position which he has been called upon to occupy. Therefore, every year makes a change in educational methods. I believe the time is coming when, instead of didactic lectures, we will have practical demonstractions of scientific results, and that the "mere talk," as it has been called, will be laid aside for the clinical demonstration. For more than a quarter of a century I have been a lecturer to students and am convined that a more practical way is desirable and would be welcomed by myself.

In reference to technicalities: There is a certain class of scientific men, and I have no criticism to make against them, who in their dealings with their special work so overload the matter with technical terms that they can never be clearly understood, even by those who are equally as advanced as themselves. To my mind the one who is the best teacher is that one who reduces everything to the simplest possible terms, omitting wherever possible technicalities. I know very well that I have been subjected to criticism both in this country and in Europe for this position; but I believe it can be maintained that if you want to instruct students you must do it in the simplest way, bringing your work before them in the

plainest English at your command. I think that this course should be followed in all our text books.

The Chairman of the Section called attention to a work in preparation, a portion of the advanced sheets of which I have had the greatest pleasure in reading. I allude to Dr. Farrar's work on regulating. I want to say just here that in my opinion dentistry has never yet produced a work equal to it, and it will be many years before anything like it can be accomplished. It shows what one devoted man can do. He has given the last six years of his life to the subject, day and night, and the result when issued will be of incalculable benefit to the profession. Every dentist should have a copy of it without regard to cost.

Educational labor is the important work of the period. We need not only more to write, but we want men to attend these meetings. What a paucity of members do we find here, large as the numbers are, for a great profession. Some of us have come almost half way across the continent, and I should have regretted it had anything prevented my being present.

Now, gentlemen, we want to be liberal. We do not wish to be dogmatic. We do not desire to crush any one by law. We want a certain degree of freedom of action in our educational movements. Colleges are being constantly criticised and the assertion is being made over and over that they turn out poor or unequal men. That is not the way to meet the subject. Give us your assistance and encouragement and I am satisfied that within the next ten years you will see an advance along the whole line of dental colleges that will surprise every man in this profession.

Dr. Atkinson: There is one thing that I think it would be well to study and that is the practical way of getting at our work. The prime effort to be crowned with success in all dental investigations grows out of respect for each other in our investigations, and the ignoring of all the littlenesses that are so sure to divide men, or at least to consume their time unprofitably. I have noticed that many have been so listless as not to have given attention enough to their own mental process to know which side of a question they were on, or whether they have comprehended what the nomination of the question involves; and we observe this in very sharp men sometimes. Laying themselves under the ban of what Paul says, "He that answereth a matter before he heareth it, it is a shame to him." That was exemplified when the blackboard was

called for to-day, and I am sure that we need points of agreement as foundations for our investigations in any subject; in other words we want foundation principles so fixed in our mind and formulated that they can be shortly stated, and that has been the effort of our investigators from the earliest time until now, under the ban and assumption of knowledge on the part of those having the field, out of which, thank God we are growing. We are not bound now to point to our authority, among real naturalists or true investigators in any department of scientific research, for we take it for granted that all those who have got enough illumination and growth in themselves to have the desire to know, have had their strength developed and retained so that they state propositions that are satisfactory to their own minds with such confidence that others will see and agree with them.

DR. PEIRCE: The section has no further report as a section, but with your consent I would like to say a few words regarding a matter embraced therein and already submitted. In the report presented this morning there is a paragraph making allusion to the formation of a committee whose province it should be to suggest some method to this association by which we might offer some inducement or stimulus to our younger members to attain a position higher than that covered by the degree of D. D. S. I believe very firmly that we would make an advanced step by having formulated some method establishing a fellowship, it may be, to secure which would be an inducement for the students in our profession to devote themselves to scientific labor, so that the profession would be benefited by their higher attainments. I wanted to call attention to this so that the association might consider the subject and if they think it feasible, take some action upon it.

DR. PATTERSON: There was one suggestion made in the discussion this afternoon, which seemed to me a very good one; it was in regard to reports from societies, and in order to give it more prominence I will introduce a resolution. It seems to me that this would be one of the most useful plans the association could inaugurate, so I offer this resolution: that the societies sending delegates to the American Dental Association be requested to instruct their delegates to select one of their number who shall compile a report upon the original work of their local associations each year, and bring such report before the proper sections in this association.

DR. CROUSE: There will be a report from the executive com-

mittee by and by, requesting the society to instruct scmebody, probably the executive committee, to send a communication to all local societies, and perhaps the entire dental profession, on this very subject of sending reports and getting them nearer to us. This will involve the expense of postage, and so forth, and I did not think it was best to do this on my own responsibility, but I am going to ask the association to do it. I am satisfied that good can be accomplished in this way, and this resolution might come in, in connection with my proposition.

DR. PATTERSON: My purpose was only to call your attention to that which I consider the best means of bringing the matter up. I am willing to withdraw the motion and do it with pleasure.

DR. H. A. SMITH: I was quite interested in the report of Professor Peirce, that portion particularly which referred to the establishment of some institution in which a degree in addition to the D. D. S., might be conferred. I would have been glad if the Professor had given us some views in reference to how that might be accomplished. In the prosecution of some other branches of science they have what are called academies. Could we establish an academy of dental science, and in that way bring up the standard of scientific investigations?

SECTION III.

Operative Dentistry.

Report by N. S. HOFF, Secretary of the Section.

Owing to the continued illness of Dr. E. T. Darby, the chairman of the section on Operative Dentistry, we are unable to present as complete a report of the progress made in the work of this section as its importance deserves. The brief time at our command since we were requested to make this report has not permitted any solicitation of papers, and none have been submitted by members of the section. Two papers have been referred to us from other sections, which will be read by the chairman.

An examination of the papers contributed to the dental journals and various dental societies, the discussions, inventions and time given to clinics, etc., seem to indicate that operative dentistry still continues to be the most interesting branch of dental science.

We believe it is desirable that some systematic method of collecting, classifying, indexing and recording this information should be adopted by this section; and would recommend that the work of the section be done in accordance with this or some other systematic plan, which will divide the work among the members of the section so that it may not all devolve upon one person, and thus present at the annual meeting a complete report of all the progress made in operative dentistry during the year. We had planned to make such a classification of instruments, appliances and the literature for this meeting, but found that the time was too short to complete it for this session.

The subject of filling roots, which occupied so much time at our last meeting, has, because of the interest there shown in it, received an unusual amount of attention during the year. That discussion has resulted in clarifying this subject and giving it a more scientific tendency. An excellent paper on this subject appears in the

December, 1889, number of the *Dental Cosmos*, written by Dr. A. Retter, of New York, entitled, "Treatment of Teeth Having Foul Pulps." A paper in the April, 1890, number of the *Cosmos*, by Dr. W. D. Miller, on the "Action of Peroxide of Hydrogen Upon the Teeth," is of considerable interest in connection with this subject. Dr. C. N. Peirce has made some experiments with peroxide of hydrogen, the results of which he will detail when the discussion of this report occurs.

Two additional materials for filling roots have been suggested in addition to those mentioned in the discussion last year. One, red cedar saturated with parafine, suggested by Dr. James H. Beebe, in the December, 1889, *Cosmos*. The other is beeswax, suggested by Dr. B. F. Arrington, in the March, 1890, *Dental Cosmos*.

Dr. Taylor, of Hartford, suggests dropping chloroform into the root canal and then dissolving the gutta-percha in it by agitation with an instrument, thereby causing the gutta-percha to settle to the end of the root canal. When the solid cone is forced into place the canal is more certainly filled to the end.

Dr. W. S. How has devised a set of needles for use in making dressings and conveying filling material into small and tortuous root canals. These needles are graduated so as to prevent forcing the materials beyond the apical foramen.

A valuable paper on the comparative value of the various antiseptics used in the treatment of diseased teeth is published in the August, 1889, *Cosmos*, by Dr. W. D. Miller, which, though perhaps belonging to another section, is of so much importance to the operative dentist that we wish to call attention to it.

Nothing of special importance has appeared during the year relative to operative treatment of pyorrhœa alveolaris.

For the treatment of sensitive dentine, Dr. J. W. Holt suggests the use of the actual cautery, applying heated instruments directly to the part. Dr. Dwinelle suggests the use of chloride of zinc powder in connection with the cautery. Dr. Rhein is still investigating chloride of methyl, and reports the most satisfactory results from its use, and so far has had no experience that would suggest his abandoning it. The numerous efforts made to secure painless operations on the teeth have given us many methods and remedies that accomplish this in such degree as to render tolerable many operations that would otherwise be unbearable, still we are unable

to report at this time any reliable method or remedy for this troublesome accompaniment of operations on living teeth, which is entirely harmless to the delicate organism of the tooth, or is unobjectionable in its application.

In the operation of filling teeth there is nothing new to report as to methods. It seems that the long discussion of former years as to superiority of methods had either exhausted this subject or the conclusion had been reached that there was no method upon which all could unite and thus establish a universal method of practice. We do not, however, believe that the time will never come when there will be a united practice. We hope for the time when the investigations as to the cause of caries of the teeth and the dissolution of filling materials shall result in precise knowledge. Then we will learn how to combat the influence of these deleterious agents, and be able to supply a filling material that will resist all dissolving agents, and methods of manipulation will be simplified and definite. Let us then encourage our workers in Histology, Bacteriology, Organic and Physiological chemistry and dental medicine.

In the way of filling materials, R. S. Williams has brought out during the year a new form of crystalloid gold for contours and general use, which many operators are using with great satisfaction. It is particularly valuable for starting fillings. Mr. Williams has also made a new line of gold cylinders which are calculated to combine all the excellencies of the many varieties now in the market in one, and at a lower price. Dr. Carroll, of New York, is making an aluminium foil for filling teeth, but we have no report from any one who has used it. Dr. C. B. Parker, of Brooklyn, suggests the use of amalgam alloy mixed with oxyphosphate of zinc as a durable filling material. Dr. Dwight M. Clapp, of Boston, makes a combination gold and amalgam filling. The filling is started with amalgam, then Steurer's plastic gold is added, and the finish made with any form of cohesive gold desired.

Not so much is being said about the excellencies of copper amalgam as there was a year ago, and no new make that is superior to all others has been put on the market during the year. Whether this material has failed to meet the expectation of its friends, or proved so satisfactory as to thus quickly establish itself, we have no means of determining. Dr. W. B. Ames advises the use of what he terms extra dry amalgam, or amalgam containing

less mercury than is required to render the amalgam sufficiently plastic for use. This amalgam is heated and mashed to a powder in the mortar and a solution of nitrate of mercury added and the mass triturated until it becomes of the proper consistency for use. The claim is that there is no excess of mercury and no subsequent wasting away of the filling which occurs with other amalgams.

Inlay fillings continue to be popular. Dr. George H. Wiegant, of Canada, has devised a set of diamond trephines for cutting out sections of porcelain from such portions of the artificial tooth, either plain or gum, as will give the desired shade and, if wanted, the gum festoon. Dr. S. D. Rambo, in the Dental Cosmos for March, 1890, describes a system for restoring corners or sections of decayed or broken teeth, with gold plate bent to the desired contour and secured with cement and pins soldered to the inner surface of the gold facing and reaching into the pulp canal or pits and grooves made into the tooth. White vulcanized rubber is also suggested as an inlay. It has the advantages of harmony in color, ease of adaptation, and capacity for a quick and high polish. It can be set with cement or chloro-percha, or into many cavities it can be warmed and pressed without an intervening cement.

The S. S. White Dental Manufacturing Co. have introduced a new cord dental engine, which promises to be a valuable improvement of the old suspension engine. It is the Bonwell engine with the Weber-Perry improvements. This company also introduces a new gasometer for use in administering nitrous oxide; a set of fissure chisels for use in the molar crown cavities, devised by Dr. W. S. How; a set of root canal drills by Dr. Littleton, and a set of root canal fillers by Dr. W. S. How. Messrs Hood & Reynold, of Boston, have invented a new dental chair modeled somewhat on the plan of the Morrison, with improvements that admit of easy rotation and elevation. J. W. Ivory has introduced a pair of molar clamps for the third molar that are decidedly well adapted to the teeth. He also has a new nerve broach that is novel and will doubtless prove useful; it is a spiral and acts on the principle of the cork-screw.

Dr. E. C. Moore, of Detroit, has devised a set of metallic racks for the purpose of containing and classifying instruments in the drawer of the case or bracket, which will prove a great convenience to the busy and methodical operator.

Dr. Letord, of Kansas City, presents a double-faced mouth mirror

which is useful in obtaining access to the buccal cavities and reflecting the light into them.

Dr. H. H. Knapp, of Jackson, Mich., has devised an apparatus for holding a mouth mirror and a large magnifier in place, at the same time holding the rubber dam or napkins in place, and steadying the lower jaw during operations on the lower teeth, allowing the operator perfect freedom to use both hands in operations.

Dr. Jno. L. Gish, of Jackson, Mich., has invented an improved rheostat, for controlling the electric current and making it applicable as a therapeutical agent in the treatment of diseases of the mouth and teeth. Chas. Mayer, of Springfield, Mass., has devised a set of test papers for testing the purity and efficiency of dental medicines.

SECTION III.

OPERATIVE DENTISTRY—CONTINUED.

Abstract of Two Papers.

ONE BY CHAS. B. ATKINSON, AND ONE BY J. L. WILLIAMS,
BY A. E. BALDWIN, CHAIRMAN OF THE SECTION.

Two papers were referred to this section by other sections, and to the writer was referred the task of presenting an epitome of the salient points of each.

The first is upon medicated oxyphosphate fillings, by Dr. Chas. B. Atkinson, of N. Y., in which he advises, after an experience of two years, in capping exposed pulps, the admixture of various medicaments with the filling material. The medicaments used are: 1, creosote and oil of cloves $\overline{aa}$,2, eugenol, 3, deliquesed carbolic acid, 4, oil cinnamon, 5, oil of cloves, 6, creosote pure, 7, creosote, oil cloves $\overline{aa}$ and iodoform, 8, creolin, 9, campho-phenique, 10, potassium chlorate powdered, 11, salicylic acid, 12, camphor pulv., 13, stick sulphur pulv., 14, iodoform, 15, oil of wintergreen.

The principle of medicinal action of the mixture is the principle that upon the crystallization of the oxyphosphate, no furthur change takes place, hence the medicament may exert some of its remedial action. He employs mostly the 1st mixture—creosote and oil of cloves. When the medicament is a *liquid* he adds about an equal quantity of medicament and phosphoric acid, and when a solid, about equal parts of medicament and oxide. These proportions may be varied as required. He believes in this way the remedial agent is constantly exerting its effect on the walls of the cavity, being especially valuable at the gum margin, thus resisting germ action, and also producing in the teeth, increased hardness and increased resistance to thermal changes. He from his experiments thinks that the first seven have been fairly tested and are about equal in durability, manipulation and time of setting—setting in about 10 minutes. He has made no effort to control color. His practice is to freely excavate, even to the surface of the pulp, and remove almost

all or all of infected matter in the cavity. He employs this system farther in retaining inlays--setting retaining appliances in pyorrhœa cases—setting crowns, and in temporary repair of artificial dentures, i.e. in setting isolated blocks or single teeth in rubber or gold dentures. He always in capping pulps, covers the exposure first with a mixture of oxide of zinc, creosote and oil of cloves, and adds remedial agents to the oxyphosphate filling whether in capping exposed pulps from caries or accidental exposures. Also uses the same agents in pulpless teeth.

The second paper is entitled "a few words on corrective, preservative and obtundent treatment of the teeth," by Dr. J. L. Will-

In the abstract of Dr. Chas. B. Atkinson's paper on Medicated Oxy-Phosphate Fillings, it is stated that "he always, in capping pulps, covers the exposure first with a mixture of oxide of zinc, creasote and oil of cloves." Dr. Atkinson desires the following correction to be made:

"I expressly state in my paper that the medicated cement is placed directly over the exposure *without* any intervening substance."

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ing sensitive dentine, and of the first use of oxide of zinc mixed with gutta-percha for a plastic stopping; Hill's Stopping, a prior and patented preparation having no oxide of zinc, but sulphate of lime to stiffen it.

DISCUSSION.

DR. PEIRCE: The use the of peroxide of hydrogen is, I judge, familiar to all the profession. It has been very successfully employed for two or three years at least in removing from cavities the products of decomposition. It has also been employed in the

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The second paper is entitled "a few words on corrective, preservative and obtundent treatment of the teeth," by Dr. J. L. Williams, of Boston, Mass., in which he says that as early as April, 1856, in "Am. Jour. of Dent. Sciences," he gave his treatment of teeth where pulps were endangered but not exposed, the main idea being the saturation and sealing of the cavity with non-irritant corrective and antiseptic applications, unsealing and repeating when necessary; mild applications being more successful than stronger. His experience to this time bears out these principles, recognizing that nature only requires mild help in removing diseased conditions, and that the reparative processes are hers.

In obtunding, the writer maintains that the treatment should be a gradual preparative treatment. At the time mentioned (1856) known antiseptics were comparatively few. The writer then used oxide of zinc to stiffen the gutta-percha, a method which since then has become well known. He often uses in checking fermentative action in deep-seated caries, a simple obtundent; a sol. of calcium chloride. However, the great object should be *not* to see how much nature will bear, but to know how she works, and to assist her. The writer claims to be the author—historically—of the first systemized plan favoring the deposit of secondary dentine, and of obtunding sensitive dentine, and of the first use of oxide of zinc mixed with gutta-percha for a plastic stopping; Hill's Stopping, a prior and patented preparation having no oxide of zinc, but sulphate of lime to stiffen it.

DISCUSSION.

Dr. Peirce: The use the of peroxide of hydrogen is, I judge, familiar to all the profession. It has been very successfully employed for two or three years at least in removing from cavities the products of decomposition. It has also been employed in the

cleansing of teeth, or freeing them from the various stains which are liable to be found upon their surfaces in children or adults where there has been a lack of care in cleansing. It occurred to me that we were not thoroughly informed as to its action on the tooth structure. It has been stated on several occasions that a tooth immersed in this fluid would become decalcified, and possibly in a similar condition to one placed in an acid. On the 7th of July I placed a bicuspid largely excementosed in a drachm and a half of the liquid. It remained twenty-four hours, when the liquid ceased to act upon it, and in the bottom of the vessel were flocculi, showing that we had the organic matter of the tooth destroyed, or apparently in solution, and the lime precipitated at the bottom of the vessel. The tooth was again placed in pure material and the same action took place. This was repeated every twenty-four hours until the abnormal growth, together with the cementum of the tooth, had all been removed, and we came down to the dentine proper. The same method was continued, but the action was much slower. The disintegrating influence of the liquid upon the dentine would not be exhausted under forty-eight hours, or even longer time, showing that the action upon the dentine was much slower than upon the cementum. In the dentine we had a less proportion of organic matter and a much greater per cent of lime; therefore the deposit or precipitate at the bottom of the vessel was much less after the cementum had been removed than while it still remained.

The tooth remained in the liquid, which was changed at first every twenty-four hours and afterward every forty-eight hours, from the 7th of July to the 27th, at the expiration of which time the root had been reduced in size fully two-thirds and was quite transparent and perfectly smooth on its surface. There was no softening, which indicated that the organic matter had first been decomposed, and the salts of lime left as a precipitate at the bottom of the vessel. I brought it with me, but the liquid has become so disturbed in transit that it does not show as it did while it rested upon my mantle. I desire to bring this question up with this statement, because I have had no definite information regarding the action of this fluid upon the teeth and I doubted that it was similar to that of an acid.

Dr. Brophy: Before making the experiments it seems to me Prof. Peirce should have neutralized his preparation, for it is well known that sulphuric acid is added to the per-oxide of hydrogen to

prevent its decomposition, and the preparation that was used by him I presume was decidedly acid in its reaction. If it had been neutralized it would not have been possible for it to disorganize the tooth in the manner that he describes.

DR. RHEIN: I have tried experiments on lime deposits on the teeth outside of the mouth, using Marchand's preparation, which is supposed to be free from all acids Dr. Brophy speaks of. The masses of calcareous deposits that I used were very large, so that there was still quite a quantity of it left undissolved at the conclusion of the experiments, but that it had a dissolving effect upon the deposit was unquestionable. From practical experience with it I believe it has value in these cases, and I would like to see it investigated in that direction.

DR. PEIRCE: If the preparation had been acid, as suggested by Dr. Brophy, I am under the impression that the salts of lime would have been held in solution and not have precipitated to the extent it did. If we place a tooth in chromic acid we do not have a precipitate of lime; we have the lime taken out and in solution, while the organic matter remains intact and the tooth flexible.

DR. HARLAN: The question of the effect of acid peroxide of hydrogen upon teeth is one which has received little attention. Peroxide of hydrogen, as it is prepared by the manufacturers in this country, at least from all the tests that I have made, presents a decided acid reaction. Peroxide of twelve volumes or fourteen volumes strength should be absolutely neutral, and the only preparations that I have ever been able to obtain that were neutral were Trommsdorf's and Schuchardt's. If peroxide of hydrogen has no acid reaction, it should have no action upon the teeth. If it possessed a decidedly alkaline reaction it would act upon the matrix and allow deposits of the flocculi, such as Prof. Peirce has described. So if you wish to use peroxide of hydrogen, be sure that you get that which is entirely neutral in reaction.

One point spoken of in the report of the secretary of the section I wish to emphasize, and that is with reference to the use of vulcanized white rubber inlays in buccal cavities of molars or of bicuspids. Last year while in Europe I saw a number of specimens that had been prepared by a gentleman from Naples. He used the English white vulcanized rubber. This was vulcanized very hard and would receive a most beautiful polish, and if the teeth were dull in appearance and the enamel partially worn away, that surface could

be finished so that it could scarcely be detected at any distance from the patient. This is not only a cheap, but a serviceable method of introducing an agent for the filling of teeth that will not be a conductor, as it is well known that one of the objections to rubber as a base for artificial dentures has always been that it was a non-conductor of heat, and hence injurious to the soft tissues.

DR. AMES: With reference to the action of peroxide of hydrogen containing an acid upon dentine, it seems to me that Prof. Peirce must be in error. While in the solution of dentine by chromic acid of which he speaks, there is no precipitate because the *chromate* of calcium formed is soluble. If the solvent be sulphuric acid contained in peroxide of hydrogen to prevent its decomposition, the *sulphate* of calcium formed would give a precipitate because it is very slightly soluble.

DR. STUBBLEFIELD: The older, ordinary, commercial peroxide of hydrogen is derived by the action of hydro-chloric acid on barium di-oxide. If in this combination there is an unequal portion of the two ingredients there will be remaining some of this hydrochloric acid, and the acid reaction which is observed will be easily determined by a very slight analysis to be due to hydrochloric acid, and I deny the statement that sulphuric acid is ever added for the purpose of preserving the hydrogen peroxide from loss of the loosely combined oxygen. I never heard of such a thing until very recently, when I saw the statement in a dental journal, and at the time it occurred to me that it could not be so, as stated.

With reference to Prof. Peirce's experiment, it seems to me that dilute hydrochloric acid with pumice would make a better cleansing application than peroxide and pumice, because the rapid evolution of the oxygen, when the peroxide is exposed to the air, would only leave H_2O which is water. I meant to say something with reference to his experiment upon that tooth. The hydrochloric acid would dissolve the lime salts, though but slightly. In the case of combination with organic products you might readily have a flocculent precipitate, which might be mineral matter. In fact I would not express an opinion as to what that is until it was examined. It does seem to me that it would not require very close analysis to ascertain the difference between the two as to whether it was due to the alkalinity—saponification—or whether it was a union with the mineral matter and the organic matter together, as I

think is most likely the case, and this deposit might be a kind of flocculent precipitate that was formed of a combination of the two and not strictly one or the other.

DR. PEIRCE: If the doctor places a tooth in hydrochloric acid, which decalcifies it, does he not find on the surface of that tooth organic matter remaining, which was what held the lime in position?

DR. STUBBLEFIELD: I would find the organic frame work of the tooth, certainly, modified by the chemical action.

DR. PEIRCE: In no one instance, when I removed the tooth each day or every other day from the stale material to the fresh, was there the slightest softening on the surface, but it was smooth and hard.

DR. STUBBLEFIELD: If you left it long enough it would remove that outer layer. If you let the action take place a while and put it under an ordinary magnifying glass I think it would show you whether that surface was perceptibly rough. It would in fact be rough.

DR. BROPHY: In answer to the criticism made by the gentlemen as to the addition of sulphuric acid to peroxide of hydrogen I would say that I did not come to the conclusion by experiments made by myself but accepted the statement of a chemist, whose knowledge of this matter I would not question. I believe the gentleman made the experiments and knew whereof he spoke, and the gentleman who has last spoken I think does not claim that he has tested it, but he is inclined to believe that sulphuric acid has not been added. It would be well I think to have a test made to determine the kind of acid that is present in peroxide of hydrogen.

DR. CONRAD: Judging from the remarks of some of the gentlemen who have taken part in the discussion, it seems to be a question with most of them as to whether sulphuric acid is found in the preparation of hydrogen peroxide most generally used by dentists. So far as I have been able to learn, this acid is placed in most all hydrogen peroxide sold, in order to aid in its preservation. I not only find it of use to preserve the preparation from decomposition, but I consider the addition of sulphuric acid makes this agent of greater value when treating diseased conditions of the mouth. When I wish to treat a case with dilute sulphuric acid, it is not an uncommon practice for me to add a few drops of the acid

to the hydrogen, expecting from this mixture better results than from the acid or hydrogen alone. The specimen presented by Dr. Peirce does not seem to have been as badly injured as we would have been led to believe, from his remarks. To me the tooth has only been thoroughly cleansed by the hydrogen peroxide.

DR. HARLAN: In order to furnish further historical evidence in this connection, I will make this statement: In some chemistries treating of peroxide of hydrogen, it is stated that a small quantity of sulphuric acid is added in order to prevent the decomposition of the peroxide of hydrogen; but I believe it is true that in the process of manufacture if it is made by the action of hydrochloric acid on barium dioxide, that the presence of hydrochloric acid may be found, but Trommsdorf and Schuchardt, and perhaps Morson, have been able to completely neutralize the hydrochloric acid, and hence their products are neutral.

DR. ATKINSON: I am very much pleased with the trend of these investigations. When we are speaking of chemistry, we want to be very careful as to arriving at our conclusions. When first using peroxide of hydrogen I thought I had found a bonanza; that I had as I called it, my washer-woman to wash out all the highways and byways of degenerated tissue and degenerated fluid, but in the course of investigation I learned that the bubbling was not confined to diseased territories, but that perfectly healthy mucus and saliva and blood would foam with the same apparent vigor that pus, sanies and ichor would foam, so that it set me a little off my base; and in connection with the manufacturer who operates under patents granted him by the United States and France, the study of the easy disruption of the molecules of $H_2 O_2$, leaving the last measure of oxygen to go to its nearest affinity, did, as Dr. Stubblefield suggested, leave us nothing but H_2O,—common water—to which we could not attribute a very great and energetic chemical clearing up of the territory.

I am somewhat embarrassed because of a mishap or delay of some kind of the express company. I have en route a package with the latest pamphlets of Charles Marchand, who presented them to me to be presented to as wide a range of teachers in dentistry as might be, and I wished to distribute them here at this time. Not having arrived, I do not know whether I shall be able before the close of the meeting to distribute them. The package contains glycozone and peroxide of hydrogen. As to the glycozone I have

had considerable experience with it, and for quite a term of years, longer than the length of time named this evening for the peroxide of hydrogen, and the difference between the glycozone, which is of fifteen volume condensation of oxygen in glycerine, and the peroxide of hydrogen is, that the bond of affinity in that molecule is stronger than it is in the peroxide of hydrogen, and necessarily gives us a much more potent germicide wherever we can carry it into the immediate deteriorated neighborhood. So that in conversation with Marchand, and wishing to have that test thoroughly made, the steps have been taken to which I refer. While speaking I want to say that when we get a new thing we are very apt to think that we have now got down to bedrock. I have so many times been disappointed from lack of knowledge and want of really grasping the subject, so as to know when my interpretations were satisfactory even to my own observation, much less to those who were at a distance from the experiment, that I want to enter a caveat against this crude kind of experimentation and calling it scientific and reliable. If the box arrives I will take occasion to distribute it, that we may get the tests from men who are competent to make the observations and report if it is any longer desirable for us to use peroxide of hydrogen at all by reason of the evanescent character of the hold that it has upon the extra atom of oxygen.

DR. OTTOFY: I wish to say a few words in regard to one of the papers presented by the section, that of Dr. C. B. Atkinson, of New York. He sent here a number of specimens and a very well written paper illustrating the incorporation of medicaments in temporary fillings. I think in all probability we can use these drugs to a great deal of advantage, and I have been in the practice of using iodoform, and occasionally iodoform and eucalyptol in a mixture, in proximity to the pulp and have found from it very good results. I think, as a rule, if we use some medicament of this character mixed with the oxyphosphate, we will find that the tooth afterward is generally in a better condition than when the oxyphosphate alone is used. I would like to hear those who have used these preparations speak upon this subject.

DR. BALDWIN: What effect do you expect to get from the iodoform?

DR. OTTOFY: It is preservative, as in all probability it prevents the growth of germs.

DR. BALDWIN: You believe it is a germicide?

DR. OTTOFY: I do.

DR. STOREY: I feel myself peculiarly happy to-night in being here. About two years ago or a little more we had before us the subject of root filling, capping pulps and the different materials for filling roots. I made the statement at that time that I still had one prop under my hopes that I would save a pulp alive. The tooth I founded my hopes upon had been filled for two years, but about two weeks after I got home the patient in whose mouth it was came to me and said, "Doctor, that tooth you filled for me about two years ago feels as though it were about two feet long." I opened it, took out the pulp, filled the root with oxyphosphate of zinc, (which is the *sine qua non* with me) and the crown with gold and up to this time it is all right.

About three years ago I filled another tooth, having a proximal cavity that was difficult to reach and I filled the cervical portion of that cavity with amalgam. The tooth was perfectly sound and had a firm solid base over the pulp chamber. About three months ago the patient came to me with that tooth feeling very long too. I took out the gold-filling and the amalgam at the base; the filling to all intents and purposes being absolutely perfect. There was no discoloration. But I found the pulp-chamber entirely open and containing a decomposed pulp.

There had evidently been a retrogressive metamorphosis in the tooth substance beneath the amalgam, bringing the pulp in direct contact with the metal. I removed the pulp and filled the roots with oxychloride of zinc which is all I want for root-filling. If I am going to use amalgam I fill the cavity before the oxychloride sets. If there is a fistulus opening I fill at once with oxychloride of zinc, which, after nearly twenty years' experience with it, I can say has never gone back on me. I do not know of a single case in which I have made a failure. If the canals are very small the oxychloride of zinc will be a sufficient disinfectant and antiseptic to overcome all trouble even if they are not filled. Not only that but you will find it bleach the discolored tooth. I have whittled down remedies in my practice to but very few. I did use peroxide of hydrogen for a while but it did not give me satisfiaction. I could only keep it a day or two where I live, and it was rather an expensive material, and I came to the conclusion that I did not have the sense to use it and so abandoned its use.

DR. PEIRCE: I have the tooth in my hand on which the ex-

periment has been made. You will see that the enamel has not been to any appreciable extent disturbed. Had the fluid been acid the enamel would have been roughened and very materially destroyed so it seems to me. It will be seen that the cementum has been removed completely.

DR. AMES: I want to ask Dr. Peirce whether after this peroxide of hydrogen had apparently become neutral, he tried it with any of the products of fermentation or organic matter to see if it had any of the properties of peroxide of hydrogen.

DR. PEIRCE: I did not.

DR. E. PARMLY BROWN: While the question of operative dentistry is under discussion, it would be well for me to mention some experiments that have been made lately which we partially reported in the first district society one or two months ago. Dr. Story has spoken of two pulps dying. Don't let any man in this dental association allow two dead pulps to stand in the way of saving two hundred. Suppose we do occasionally have a pulp die, is that any reason why we should not try to save them generally? I try to save all pulps without exception where there is any hope.

I want to compliment Dr. Atkinson and his son for bringing before this association these specimens of oxyphosphate incorporated with medicaments. We have been talking about having arrangements made for manufacturing these medicated fillings. He is on the right track as sure as you live. Supposing that these medicaments would not interfere with the setting of the oxyphosphate, we are going to put it in asbestos. This asbestos filling which I spoke of at the First District meeting is a non-conductor. We have six varieties that can be bought in New York, and none of them are worth a cent. The South Sea Island asbestos we can obtain in Europe and it does the work beautifully. It also does nicely for setting porcelain and gold crowns. We have had a great many experiments made on children's teeth, on the grinding surfaces as well as at the cervical borders, where the fillings are likely to be disintegrated by alkalies, but we have not yet examined them since they have been put in to report on them; but as a non-conductor under gold fillings the success is absolute.

DR. SWASEY: Dr. Harlan spoke of rubber inlays. I have seen some of them. They look very well but the only one that I have ever seen that I religiously stood by, was one made from black rubber. White rubber, where it is used on the masticating surface

wears out, not as fast possibly as gutta-percha, but it wears out rapidly. The inlay that I use in all large cavities for proximal and grinding surfaces I make from gold. My method is to cut a piece of proper size from a ribbon of gold rolled to about 100 to 120, and then to anneal it. A piece of cork, or erasing rubber is then cut to fit into the cavity. The piece of annealed gold is then placed over the cavity, being held with the pliers in the left hand, while the gold is burnished, with a large burnisher into the cavity. The cork or erasing rubber is then put in place and held there and the edges are then burnished down. The overlapping gold should then be trimmed off, the whole annealed again and placed in the cavity with rubber or cork in the inside. The mouth should then be closed when the pressure of the rubber will make an ajustment of the gold on the margin of the cavity. The inlay should then be carefully removed and invested. Twenty carat gold should then be cut into strips and placed in the shell and melted there. The inlay should then be tried in the cavity, and more gold added if necessary —or some of it ground out, as the case may be. When it is thus completed, slight grooves should be cut around the part that goes into the cavity. It should then be set with oxyphosphate of zinc in a creamy condition, and be driven to place by tapping with a mallet. When it is thoroughly set it should be finished, as any other filling.

DR. HARLAN: With your kind indulgence I will give you the tests of the peroxide of hydrogen that Dr. Peirce used, which I have made with test-paper. Litmus paper it turns red. With hydrate of starch test-paper, testing for peroxide of hydrogen of a strength of over 12 volumes, it must be dark blue in one minute, and if it is weak, less than 4 volumes, in the same time. With this test it was first purplish and then blue.

DR. BALDWIN: How long did it take?

DR. HARLAN: It took about a minute and ten seconds. With the potassium iodide test-paper it turned it blue instantly. That is what it should do. The strength of peroxide of hydrogen is shown by its ability to liberate iodine from iodide of potassium. With the potassium ferro-cyanide test-paper, for alkali, there was no effect whatever.

DR. PEIRCE: Would Dr. Harlan consider these tests which he has made any evidence of the condition of the peroxide of hydrogen before the tooth was placed in it, or would it be possible for

this solution to have undergone some change during the week in transit, with the heat and the motion.

DR. HARLAN: Animal matter, in the presence of hydrochloric acid, which I believe is in this peroxide of hydrogen, would not be decomposed.

DR. P. T. SMITH: We know by experiment that it is one of the most difficult things in our practice to preserve pulps of teeth where cavities of decay have almost reached the chamber which that organ occupies. We are taught to believe that if the cavity does not reach too close to this chamber a proper filling may be adjusted which will not produce an irritation, and therefore the pulp can be preserved alive.

We know the histological arrangement of a pulp and the ramification of the tubuli from this locality. It has been a question as to what these tubuli are filled with, but we know they are filled with a fluid (if not with nerve structure) which performs the functions of nerve tissue, and whenever decay, or any accident happens to the body of a tooth, we have the destruction of the contents of these tubuli, and that of itself is a threatening danger to the perpetuity of the pulp. It is not always thermal influences arising from the presence of a filling that destroy the pulp. It is the destruction of the contents of the tubuli. When you talk about saving pulps without paying attention to the principles of harmony of mental existence, which so unmistakably endows every atom of human tissue, you have lost sight of the most important point in the effort which you are trying to make. If an arm or a limb be taken from a man a certain portion of the brain is also taken. That individual does not represent the mental power, the mental ability if he has been deprived of a limb, that he did before he sustained such a loss. It is the destruction of the elements within the tubuli that produce the danger and death of the pulp, excepting there be mechanical interference, or thermal irritation, and so forth, that come from the presence of a filling.

DR. GODDARD: Sometimes the operation of implantation is performed. I am not here to advocate it nor to speak against it, but merely to tell you how I have prepared teeth for the operation. If the operation ever becomes extensively practiced, the great question will be where to find a supply of teeth, especially of incisors and cuspids. I bring this up under the head of operative dentistry, because the operation of preparing a tooth for this purpose is much

like that of filling a tooth with gold. It is easy to find a suitable root for almost any case of implantation. A Logan crown can then be selected for the case, fitted to the root and attached with cement in the usual manner. By making a groove around the tooth with a fissure burr, between the neck of the tooth and the end of the root, and filling that groove with gold, a perfect joint is made between the root and the crown, so that decay cannot commence at that point. The gold filling can be smoothed off in accordance with the contour of the root and crown at the point of union and will present when finished the appearance of a gold band joining the two.

DR. STOREY: I want to thank Dr. Smith for his remarks upon this subject. In my observation I have found that certain teeth have died where the filling has been good for a great many years. When I have asked patients if the dentist who filled those teeth did not put something in them to destroy the sensibility, the reply has been, "Yes, it hurt so that I could hardly stand it and he put something in it to destroy it." That destruction of the contents of the tubuli went on until it reached the pulp chamber. In almost every instance I found that where there was a large amount of material between the filling and the pulp and the pulp had died, those teeth had been exceedingly sensitive, and some destructive material had been put in for the purpose of rendering them insensible.

DR. CROUSE: Were those your own experiments or did you get the history from the patient?

DR. STOREY: Some my own, and some of them had come from a distance, probably some of them from Chicago.

DR. CROUSE: My observation and my experience of twenty years in capping pulps, have been the reverse of what has been stated by the last two gentlemen who have spoken on this subject. I recognize the fact that my observation does not agree with many others, but it accords with some others or I should conclude that I

must be wrong; and sometimes I get dejected and lose faith in myself and try some other treatment. I have made mistakes a great many times, but my practice of twenty years in capping pulps has been a very satisfactory one—quite as much so as that of filling of roots. These gentlemen do not tell us whether patients come to them after roots have been filled and state that the teeth are a foot long.

DR. STOREY: I never have had them do so.

DR. CROUSE: If I had so much better success with devitalizing pulps and filling roots than with capping, I would say so. But I do not have that kind of experience. I think a tooth is much more comfortable with a pulp in it than without, and for that reason it should be preserved if possible. I do not like to hear the practice of capping pulps abused or the idea thrown out that it is a failure when I know that it can be made a success. I like to hear the experience of practitioners, but I want them to be accurate and reliable; and not based on the recollections of patients as to what occurred fourteen or fifteen years ago; that kind of testimony is not of any value.

DR. STOREY: I would like to say to Dr. Crouse that he lives in Chicago, and I live in Texas. He can save pulps in Chicago that he could not in Texas. I have been fought from one end of the United States to the other on the subject of filling the roots of teeth and upon the subject of destroying the pulps of teeth. I have been fought in my own dental association by men who tell me that they do not destroy any pulps. There is a funeral in my office about three or four times a week. I destroy the pulps always where they are exposed or the tooth is aching, and I don't have the patients come back to me with swollen faces. I do not practice dentistry to make trouble for myself and as long as I capped pulps I did make trouble for myself and for the other fellow too.

DR. CROUSE: You think that the climate has some influence?

DR. STOREY: It is climatic influence.

DR. CRAWFORD: Nothing has been said with reference to the question of differential diagnosis. That certainly cuts a conspicuous figure in the management of the dental pulp. There are two extremes, one represented by my honorable friend from Texas, and the other by my distinguished friend from Chicago. One has gone so far that he says that he devitalizes all absolutely open pulps that come into his office. I would infer from what the other says

that perhaps he represents that class of men who would go so far as to even amputate the pulp, leaving remaining a portion in the root canal and then to cap that. This brings us to appreciate the fact that we should occupy a middle ground. My practice in reference to the management of this question is based upon careful examination of each individual case. I will offer a bonus of any reasonable amount for any man in the south who has ever succeeded in preserving vitality in a deciduous tooth after any considerable portion of its root has been absorbed; and I undertake to say that no man has ever preserved for any great length of time the dental pulp of a permanent tooth that has been exposed to such an extent that the sensibility of the interzonal layer is impaired. My understanding of the effect of nervous reflex action is that where a minor organ or nerve is affected, it very seldom affects an organism of greater magnitude. I never make a protracted effort to save the open pulp of a tooth where it has been exposed long enough to impair the sensibility of the interzonal layer. If I fail to relieve the extraordinary sensibility, and the concomitant symptoms that are present, I proceed to treat it in the manner of my friend from Texas. But on the other hand, if it can be relieved by proper treatment, I would take up the treatment as suggested by my friend from Chicago, and do my best to preserve the pulp. If I do not succeed and the death of the pulp ensues, the tooth is then in the best condition for root filling.

Dr. Baldwin: In the practice of general surgery it is always expected that all allowances possible shall be made for not only climatic conditions but also personal conditions, under which the system may be placed at the time an operation is to be performed. I think in the treatment of the pulp of the tooth the same rule should be observed, and that not only the climatic conditions but the constitutional condition of the patient and the physical and pathological condition in which the tooth may be at the time of the operation should have careful consideration. I believe that these gentlemen who have had the floor, if we were to give a liberal interpretation to what they have said, would not seem so far apart as they would have us believe. I believe oftentimes we may make honest mistakes in our records and in our statement of the condition of affairs. I have seen teeth where it was supposed the pulps had been saved by capping and found the pulp dead; and this is the explanation I have placed upon it: The pulp had died

a painless death, and as is often the case with a dead pulp, without giving any trouble, and it had remained and might remain so for an unlimited time. Some of these teeth that I have seen have been sensitive to heat and cold although the pulp was dead. That may seem a questionable statement, but I think if any of you have experimented with teeth after the roots are filled you have found some of them exceedingly sensitive to heat and cold. That may be easily explained by the changed condition of the current of nourishment to the teeth. We know that the tooth derives its nourishment from two different sources, the pulp and the peridental membrane, and then it is physiologically correct to state, that where the current of nourishment to a tissue is changed and one of the supplies cut off an increased supply goes to it from the other source, rendering those parts hypersensitive. In this way excessive sensitiveness of the cemental or pericemental part of the tooth may occur. We certainly would hope to obtain better results from trying to save a pulp in the case of a robust, healthy young person, than we would in the case of one who is infirm, tuberculous or lacking in all the elements of a healthy physical condition. I do not think it is advisable, from my reading and experience, to attempt to save the pulps of teeth, in the mouths of patients who are not in healthy condition, if the tooth has given any serious trouble, or if there has been severe pain indicating pulpitis.

I think there is much misunderstanding in the discussion of this subject in our dental societies, arising from the different meanings attached to the term "exposed pulp." I have asked its meaning of a great many, and I do not think I ever heard two men give the same definition of an exposed pulp. When I speak of an exposed pulp, I mean one that you can see and get to without taking away tooth tissue. I think Dr. Crouse may have special manipulative ability in handling remedies that he uses, for he certainly has better results than the most of us have. I would judge from Dr. Brown's remark that he has the same manipulative ability, for the remedies he uses, in my hands and in the hands of those I have talked with, on teeth that have had pulpitis for any length of time do not succeed, and in my hands such teeth had better have the pulp destroyed, and the root canals filled.

Dr. Rhein: I wish to point out the advisability of saving the pulps alive in patients who have not reached that age where the teeth have become thoroughly matured. This is a factor that has

been entirely overlooked in the discussion; and whether such a tooth will eventually retain its pulp or not it will be much more likely to be permanently useful, if the pulp can be retained in a healthy condition until calcification is completed.

DR. CRAWFORD: Do you regard the pulp more liable to be saved before or after the complete development of the tooth in case it should be exposed?

DR. RHEIN: In my experience I think it is far more difficult to preserve the pulp of a tooth that is not fully developed than it is one that is so.

DR. CONRAD: I deem it eminently proper to attempt the capping of all pulps in young subjects, and to stop these attempts when the patient reaches mature age. In our section of the country, to cap a pulp successfully is a more difficult operation than seems to be the case with our friend from Chicago. I believe with Storey of Texas that the climate has a great deal to do with the success or failure of pulp-capping. In a certain standard publication, a prominent dentist from the East tells us, that to get the best results we must use some such material as oxychloride of zinc to superinduce a deposit of secondary dentine. In the same volume we find a prominent dentist from the West saying, never use an irritant, as irritation will cause pulp calcification, and calcification means the ultimate death of all pulps. What are most ordinary dentists to do, when the dental professors hold to such diametrically opposite views? From my own clinical experience, it is unsatisfactory practice to use any material or medicament which will have an irritating influence upon the pulp, as even the slightest irritation may cause this process of pulp calcification which is an effort of nature to protect the injured tissue. This process once established, it is only a question of time when the pulp will die. Perhaps the future has in store for us a time of practice, which will cause pulp-capping to be a more successful operation. I hope the day will come when pulps can be capped with a certainty of future comfort—as a live tooth is better than a pulpless one, but a pulpless tooth with the root canals well filled is better than a sick live one.

SECTION V.

MATERIA MEDICA AND THERAPEUTICS.

Synthetic Carbolic Acid.

PAPER BY A. W. HARLAN, CHAIRMAN OF THE SECTION.

PHENOLS: ACIDUM CARBOLICUM CRUDUM; ACIDUM CARBOLICUM; PHENOL; PHENIC ACID; PHENYLIC HYDRATE; ACIDUM CARBOLICUM SYNTHETICUM. First discovered in 1834 by Runge. It is also contained in the urine of herbivoræ, and is already formed in castoreum. (Richter.)

Carbolic acid has occupied such a large field in the practice of dental surgery for the past twenty-five years, that I thought a short sketch of its leading properties and uses, including synthetic carbolic acid, might not be out of place at this time. One of the earliest authors who wrote on carbolic acid was Garrod, in his materia medica, in 1864, as follows: "Carbolic acid. Preparation: A product of the distillation of coal.

Description: Carbolic acid is generally met with in the form of an oily liquid, specific gravity 1065, with the odor and taste of creosote. It may also be obtained in crystals, which form long and colorless needles, melting at about 95°. A minute trace of moisture causes the liquefaction of the crystals.

Properties and composition: Carbolic acid is sparingly soluble n water, soluble in ether, alcohol and strong acetic acid. It forms crystalline salts with potash, but the solution of carbolic acid does not redden litmus paper. The composition is represented by the formula $H\,O,\ C_{12}\,H\,O_{55}$, a hydrate of phenol. It is sometimes called phenic acid.

Therapeutics: Carbolic acid possesses powerful antiseptic properties, and has been much used lately to correct the fetor of gangrenous and offensive sores. It renders the discharges less noxious,

and removes their disagreeable and putrid smell; hence it is particularly useful in cases of necrosis and caries, and other ulcerations attended with offensive discharges. Internally it resembles creosote in its action, and may be given in similar cases. As an *external* application to ulcers, and so forth, one part of the acid to seven or eight of water; *internally*, one minim in the form of a pill."

Fowne's Chemistry, 1868: Phenol is produced by the dry distillation of coal, and forms the chief constituent of the acid portion of coal-tar oil. This is the source from which it is most frequently obtained. * * * Pure phenol, forms long, colorless, prismatic needles, which melt at 35° C. (95° F.) to an oily liquld boiling at 180° C. (356° F.) and greatly resembles creosote in many particulars, having a very penetrating odor and burning taste, and attacking the skin of the lips. * * * The crystals absorb moisture with avidity and liquefy. It coagulates albumen, and is a powerful antiseptic, preserving meat and other animal substances from decomposition, and even removing the fœtid odor from them after they have begun to putrefy.

National Dispensatory: Absolutely pure carbolic acid was obtained in 1871, by Church, from the nearly pure commercial product. * * * Absolutely pure carbolic acid has a faint aromatic odor, it is colorless, crystalline, and does not absorb moisture from the atmosphere (Moss, 1875). Usually, however, it retains a minute quantity of water, by which it becomes deliquescent; with a little more of water it forms an oily liquid at ordinary temperatures, and if traces of the tar products are present, it acquires a reddish color on exposure. Its odor is modified by the presence of a little cresol.

Estimation of Water in Phenol.

A sample of crude carbolic acid (i. e., the liquid remaining after crystallization of true phenol, and consisting of cresol and higher homologues), when tested by three methods—(No. 1), by distillation; (No. 2), by agitating 1 volume with 3 volumes of saturated salt salution; (No. 3), by agitation with equal volumes of 48 to 50 per cent of sulphuric acid (conc.)—gave the following results: No. 1, water, 8.6 per cent; No. 2, water, 8.00 per cent; No. 3, water 8.25 per cent.

The distillation process gives the true percentage of water if

the distillate be not observed too late; next to this is the test with vitriol.—J. A. WILSON, in *Chem. News*, May 16, 1890.

FARQUARSON: *Physiological effects.*—Carbolic acid is, in the first place, an antiseptic, from its power of destroying the minute forms of animal and vegetable life. * * *. It is an irritating substance, and if applied sufficiently long to the skin, will cause sloughing. It has, however, undoubted anæsthetic properties * * * . Although carbolic acid may be of use in correcting fetor it is too irritating to make a good lotion for wounds or ulcers (unless properly diluted with oil 1 to 24, or water ℥1 to O.j., when it forms an efficient dressing). It has been used as a caustic in some ulcerative affections, as lupus. * * *. If administered in sufficient quantity, it is very poisonous in its operation, causing failure of the heart's action, humid and embarrassed breathing from irritation, and then paralysis of the respiratory center in the medulla oblongata, spinal convulsions, gastro-intestinal irritation, lowered temperature, and albuminuria. Its antiseptic properties sufficiently explain its internal use. Carbolic acid is rapidly absorbed, and quickly and entirely given off by the urine, to which it imparts a peculiar greenish black hue and its own peculiar smell. *Antidotes:* Olive oil and saccharated lime.

One volume of liquefied carbolic acid, containing 5 per cent of water, forms, with one volume of glycerine, a clear mixture, which is not rendered turbid by the addition of three volumes of water (absence of creosote and cresylic acid). (Mitchell.)

Zinci sulpho-carbolas: ($Zn\ C_6\ H_4\ S\ O_4$) colorless, odorless crystals, which are readily soluble in water; external use chiefly. * * *. Turns red under the action of light, with the formation of pheno-chinon (Wichelhaus), an oxidation product.

Impure carbolic acid is of a dark color, and contains several congeneric bodies, especially xylic and cresylic acids. For disinfectant purposes they appear to be at least of equal value with the carbolic acid, and therefore the crude product is very largely used. (Wood.)

As a local anæsthetic it is one of the very best remedies that can be used, relieving pain by its anæsthetic properties, and at the same time lessening suppuration and facilitating cicatrization. (Wood.)

As early as 1870 it was known that carbolic acid was not a powerful germicide. (John Dougall.)

When a liquid containing carbolic acid is boiled with a little solution of mercurous nitrate containing a trace of nitrous acid, a reduction of the mercurous salt takes place and the liquid becomes of an intensely red color. This test will detect one part of carbolic acid in 200,000. (Plugge.) (Biddle.)

The classical work of the late Charles Loudon Bloxam has the most complete account of the composition and properties of carbolic acid extant. He says: "Carbolic or phenic acid, or phenole (C_6H_6O), derives its interest chiefly from its constituting a great part of the ordinary commercial creosote (from *kreas*, flesh, and *sozein*, to preserve). It is also present in cow's urine and in that of some other animals.

"It is found chiefly in the heavy or dead oil of coal-tar (page 456), particularly in that portion which distils over between 300° and 400° F., when the oil is submitted to fractional distillation, and it appears to be the carbolic acid which confers upon this heavy oil its valuable antiseptic properties, leading to its employment for the preservation of wood from decay. In order to extract the acid from that portion of the dead oil which distils between 300° and 400°, it is treated with caustic soda. A crystalline mass is deposited which is separated from the liquid portion and heated with a little water, when a solution of sodium-carbolate is obtained. This is separated from a quantity of oil which floats above it, and is decomposed with sulphuric acid, when the carbolic acid separates as an oily layer upon the surface. This is drawn off, digested with a little fused calcium chloride to remove the water, and distilled. The distilled liquid, when exposed to a low temperature, solidifies to a mass of long colorless needles, which are easily liquefied by heat. Carbolic acid has the peculiar taste and smell of creosote. It dissolves sparingly in water, but readily in alcohol. When a piece of deal is wetted with a solution of carbolic acid and afterward with hydrochloric acid, it becomes blue on drying. The genuineness of a commercial sample of carbolic acid may be tested by shaking about a drachm of it with half a pint of warm water, which will dissolve the pure acid entirely, but will leave any "dead oil" undissolved.

A solution of one part of caustic soda in 10 parts of water should dissolve 5 parts of pure carbolic acid. When carbolic acid is

shaken with one-fourth of its weight of water, and exposed to a temperature of 39° F., it deposits six-sided prismatic crystals of a hydrate, 2 C_6H_6O, H_2O, which is soluble in water, alcohol, and ether, and fuses at 61° F.; the acid properties of carbolic acid are of a very feeble and doubtful character. It is the representative of the class of phenols which resemble the alcohols in composition, but are distinguished from them by their tendency to combine with alkalies. Carbolic acid, or phenole, or phenyle hydrate, C_6H_5 (O H). When distilled with chloride of zinc or of aluminium, phenol yields phenyle ether or diphenyle oxide $(C_6H_5)_2$ O, and a compound O $(C_6H_4)_2$ C H_2. When this is acted on by oxidizing agents, it yields a ketone containing O $(C_6H_4)_2$, C O. On fusing this with potash it yields potassium salicylate H O (C_6H_4) C O_2K, and potassium phenate, C_6H_5O K. The aqueous solution of phenole gives a purple-blue color with ferric chloride, and a pale yellow precipitate with bromine water (Tribromophenole $C_6H_3B_3O$) this is an exceedingly delicate test for phenol.

By the action of zinc chloride on mixtures of alcohols with phenol, the elements of water are abstracted, and phenoles are obtained in which alcohol radicals replace hydrogen; thus phenol and amylic alcohol yield amylephenole, $C_6H_4C_5H_{11}$ O H.

Carlolic acid is very largely used as an antiseptic agent. In medicine it is found very valuable, especially for the treatment of putrid sores; and, in admixture with sulphite of line, it forms the substance known as MacDougall's disinfectant. Calvert's disinfecting powder consists of clay with 12 or 15 per cent of carbolic acid."

During the past year we have been treated to a surprise in chemistry, by the addition of synthetic carbolic acid, a sample of which I will pass around.

Synthetic Carbolic Acid.

The "Badische Anilin-und Soda-Fabrik" at Ludwigshafen on the Rhine announces that it has put on the market absolutely pure phenol, or carbolic acid, prepared by synthesis. Hitherto all carbolic acid used in medicine or the arts has been prepared from coal tar. But such an acid is never quite pure, always containing certain impurities derived from the coal-tar. The best proof of the presence of the latter is the melting point. Pure carbolic acid melts at 41°–42° C. (106°–107° F.). The commercial "pure" acid

melts at 35°–37° C. (95°–98.6° F.). and among the very best brands existing in the market none were found melting above 39.5° C. (103 F.).

The melting point of the new synthetically prepared acid is, as stated above, at 41°–42° C. It boils at 178° C. (352.4° F.), the exact temperature heretofore found for pure phenol. This temperature rises to 181° C. when the whole thermometer is surrounded by the vapors of the boiling acid. The synthetic acid is absolutely anhydrous and colorless, and is soluable in 12 parts of water to an absolutely clear liquid. The most characteristic difference between it and the acid prepared from coal-tar is the odor. All brands of the acid heretofore found in commerce possessed a more or less distinct tarry odor. The synthetic acid, however, has a faint "pure" odor, not in the least recalling that of coal-tar. The odor is almost unperceivable in a 5 per cent aqueous solution, which is not the case with the commercial sorts.

This synthetic acid is put on the market in two forms, in a coherent crystalline mass and in loose crystals.

Gehe & Co., in their October report, state that the precise method by which the acid is prepared has not become known, but that it is probably produced during the process of sulphonizing benzol and subsequent fusion of the benzol-sulphonate with caustic alkali.

The price of this synthetic acid is quite reasonable. It is quoted by Gehe & Co. at 4.60 marks per kilo, while the pure redistilled coal-tar carbolic acid is quoted at 4.10 marks. These figures will at least show the *relative* value of the two products at Dresden.

Some experiments have been made by Dr. Ohlmueller, assistant in the Imperial German Health Department, to test the relative disinfecting power of the "synthetic" carbolic acid (*Pharm. Zeit.*, 1890, 142).

The sample examined, solidified at a moderate temperature to greasy needles that reflected light strongly, had a specific gravity of 1.0681, and melted at 41° C. With the exception that the compound gave a faintly acid reaction with blue litmus paper, it corresponded to all the requirements of the Pharmacopœia Germanica. The comparison was made with ordinary official carbolic acid, as well as two varieties of crude carbolic acid—oily and tarry—mixed with sulphuric acid, and the estimate of their relative power as disinfectants and antiseptics was based upon their anti-

bacterial action. The conclusions arrived at were, that there is a difference in the disinfecting power of the two kinds of carbolic acid, since the synthetic acid diminished the life activity of the bacteria experimented upon rather less than the older kind, but that the difference was so small that the two kinds might be considered to be practically of the same value.

The disinfecting action of the mixture of crude carbolic acid and sulphuric acid was found, however, to be greater than that of either of the purer acids used alone.—*Pharm. Journ.*

Pure Phenol, or carbolic acid made synthetically, was exhibited at the recent meeting of the German Apothecaries' Association. It is claimed to be chemically pure and absolutely free from the impurities derived from tar, usually present in ordinary carbolic acid, from which it differs in its melting point, being 41° to 42° C. against 35° to 37° C. It boils at 181° C., taking the temperature of the vapor. It is anhydrous, a 5 per cent solution of water being clear and almost inodorous. The *Pharmaceutical Journal* (Sept. 28, '89), regards it as of great value in the manufacture of salicylic acid, aside from the advantages derived from its purity as a medicinal agent.—*Western Druggist.*

One of the advantages to be gained in the use of the synthetic product appears to be its greater solubility in water, thus enabling the operator to use it in greater strength without diminishing its causticity.

Carbolic acid has occupied probably one of the most important places in modern surgery,—in fact the Listerian system was founded in great measure upon it. In dental surgery it filled a similar place. It has been used as an obtundent of sensitive dentine, as an ingredient of arsenical paste, as a disinfectant and antiseptic in various forms, as a component of pulp cappings, as a spray for the mouth and throat, to irrigate abscesses, and to open them, as a wash for the antrum, as a direct application to exposed pulps, as a dressing for root canals, as an astringent and stimulant, and as an ingredient for injection around the roots of teeth with camphor, menthol, potash, iodine, glycerine, tannin and various other agents too numerous to mention.

A glance at the Transactions of Societies and the pages of dental books and journals will reveal the fact that of all remedial

agents used by dentists since 1865, carbolic acid and nitrous oxide are the two that have been most written upon. Many scientific men have studied it experimentally and clinically, and they are still engaged in the work which indicates that in spite of laboratory work showing its weak points in bacteriology, dentists have a blind regard for it, and it is their sheet-anchor in so many phases of practice that they are not yet ready to abandon its use. I have had a warm interest in its use in the practice of dentistry, but I must, in spite of its laudation from so many sources, point out the reasons for its abandonment in certain lines of practice.

First, Destruction of the pulp. If a paste composed of arsenious acid, carbolic acid and acetate of morphia is used on the pulp, for its destruction, it will be found that the pulp will very soon begin to putrefy if left exposed to the ingress of saliva, even though tolerably well sealed with a sandarac, cotton or other plug. Moisture is always deleterious to the integrity of a pulp destroyed by such a combination. We should use instead oil of cloves, cassia or cinnamon. The action of the arsenic on the life of the pulp is retarded by those agents, but when it is once deprived of vitality its substance is so strongly permeated by the oils that decomposition does not supervene.

Second, As a root canal dressing it is, on account of its solubility in water, absolutely unreliable because of its easy disintegration by this agent. In addition to this, as I have frequently pointed out, it coagulates the surface of the animal matrix of the tooth, rendering it neceesary to cut away the surface before root filling is attempted, if we desire to preserve the color of the crown of the tooth. It is self-limiting in a hard structure and is not diffusible.

Third, It is not a chemical disinfectant, when brought in contact with sulphuretted or phosphoretted hydrogen, only masking the odors instead of destroying them.

Fourth, By its positive lack of diffusibility in dentine it prevents the destruction of absorbed ptomaines or septic matter, and gases in the dentine of pulpless teeth, and thereby the object of using it is defeated at the outset. It is positively useless as an agent in the injection of blind abscesses unless we seek to convert such an abscess into one of the acute variety.

Fifth, Carbolic acid, as a stimulant around the roots of the teeth by its superficial action, may be discarded from the list of

valuable agents, unless it is first combined with camphor, glycerine, tannin, or an oil to remove its causticity. Water always lessens the causticity of carbolic acid.

Sixth, As an application to the pulp when exposed, its office is only transitory. If there be suppuration it arrests it for the moment, but in a few hours it will lose its effect, and in most cases the pulp that we may desire to save will be irretrievably lost. If it be a fresh exposure, the necessity for forming an eschar does not exist, as it in no way simulates nature's covering.

As has been quoted, it is an irritant escharotic and is destructive. That so many pulps do live after its application, under such circumstances, only goes to show how nature may be abused and still preserve her vitality. It were far better to arrest the hemorrhage with an astringent, and place some non-irritating substance over the pulp than to run such risk as its direct application to the pulp.

Seventh, As an agent for injection through the roots of teeth to reach an abscess with a fistulous opening, it is valueless if there be fine roots that are not entirely free from fragments of pulp tissue, as it does not preserve pulp tissue even though the root and crown of the tooth be well filled with the best agents to be obtained for this purposc, e.g., gutta-percha, oxy-chloride or oxy-phosphate of zinc. It is a mistaken idea to suppose that an agent like carbolic acid, liquefied or diluted with water, will prove to be a permanent antiseptic in the presence of moisture, such as is nearly always present in a tooth. It does not possess embalming properties, because it is easily absorbed and disappears. It should form no part of a root-filling, nor should it be introduced into roots permanently. Copal, Canada balsam, or other agents of this class, may be used on an exposed pulp in its stead, and for injection into abscesses, using the root of the tooth as a channel, potass-permanganate, silico-fluoride of sodium, boro-glycerine, the oil of cloves, cassia, cinnamon, myrtol, and agents of this class are far more powerful, with better stimulating antiseptic and disinfectant properties, and they do not possess the coagulating property of carbolic acid, or its disagreeable odor, and under no circumstance will they clog a delicate canal or destroy the soft tissue to which they are applied. Carbolic acid should take its legitimate place as a spray, a local anæsthetic and component of mouth-washes in dental practice and as an adjuvant to the oils where local medication

around the roots of teeth may be indicated, or for injection into the antrum of Highmore, combined with glycerine, tannin, camphor or potash, or be relegated to the laboratory as a component of sodium phenate or in other of the chemical uses for which it is so admirably adapted.

SECTION VI.

Physiology and Etiology.

Report by H. A. SMITH, Chairman of the Section.

In 1882, at Cincinnati, a resolution was adopted by this association appropriating $250 for the purpose of beginning the work of recording and tabulating the dental aspects of the various collections of crania. The resolution was on the following day rescinded.

Subsequently several State societies took up the subject and at our last meeting a member of this section representing a committee of the Illinois State Dental Society, suggested to this association the examination of prehistoric crania. It was thereupon moved and adopted "that Section VI. of this association be constituted a committee to act in concert with the Illinois State Dental Society in the matter of the examination and tabulation of prehistoric crania, and that the sum of $500 be appropriated from the treasury for this purpose."

As the result of consultation among members of the section and of conference with the Illinois society, the conclusion was reached that considerable preparatory work must be done before beginning examinations. With this object in view a scheme has been embodied in the accompanying blank form, which is headed "Cranial Examination Record; Section VI., American Dental Association." An example of the mode of filling in the form with desired data is also supplied, and with printed copies of the blank, laid herewith before the association.

The adoption of a system of dental notation seems to be requisite, and as will be seen, the Hillischer system has been in part employed in the preparation of a scheme and blanks for tabulation of crania. It will be noticed the facial angle has been included with record of race, sex and age. The value of the facial angle

from the dental standpoint is a matter yet to be determined; as also the question of the manner in which prognathism affects dental expression.

While the scheme presented was being prepared a paper appeared in the *Dental Review*, by Dr. E. G. Betty, of Cincinnati, entitled, "A Critical Examination of the teeth of Several Races, Including One Hundred Mound Builders, Selected from the Army Medical Museum, Washington, D. C." Dr. Betty, unassisted as he was in his work, has shown the true scientific and professional spirit, and the dental profession especially are greatly indebted to him for the careful, systematic, and in some respects original, manner in which he has tabulated so large a number of crania.

We have ventured to propose different bases of measurements from those adopted by Dr. Betty, and call attention first to that of 3 to 3. The character and positions, functions and relation of the cuspidata in both maxilla of the human and also of the comparative subject are of interest to the investigator, and of practical importance to the dentist. It is thought further study of the forms of the dental arches will show that measurement from neck to neck between the palatal centers of the cuspids, or between the like edges of their alveoli when the teeth are missing, will afford a more correct basis for estimating or determining the aspect of the anterior dental arch than would be obtained by measurement from the labial, or disto-labial neck surfaces of the cuspids, or of their alveolar edges.

In crania, from which the teeth have been lost after death, it is often found that portions of the external alveolar plate have been broken away. This is an additional reason in favor of the proposed line of measurements, which include the second molars, 7-to-7- from palatal (or lingual) neck to neck. It is furthermore to be said that the tabulated cranial data is to be finally compared and correlated with measurements of living subjects and of casts and cuts. In these cases the internal aspects are most commonly observed by the dentist, and most accurately represented by casts and cuts. Hence it is concluded that if but one series of measurements is to be made, the internal line would be preferable. It is, however, entirely practicable to adopt both lines, and possibly that may be deemed best.

The measurements from the median alveolar points to the alveolar points between (-7-and-8-) the second and third molars com-

plete the data requisite for a clear representation of the sizes and shapes of the adult dental arches.

The supplemental measurement from the median alveolar point to the spinous process completes the data necessary to a clear grasp of the oral aspect or plan presentation of the superior maxillary; the height of the vault between the second molars being but a single measurement of a concavity, which for a correct graphical expression would require many measurements.

The measurements of the inferior maxillary from the median alveolar point to the distal surface of the condyle, and from the outside to outside of the condyles, together with one definition of the angle of the ramus with the base of the bone, should lead to some instructive conclusions, among which will probably be a closer approximation to the ages of more or less antique subjects.

Distinctively dental details are amply provided for and need not be specifically alluded to further than to direct attention to the desirability of a critical examination of the tubercular, or, as we prefer to term them the cusped characteristics of the molar teeth. Whether certain evolutionary theories may or may not be re-inforced thereby, it is nevertheless of consequence that the attention of the profession should be called to the importance of a careful record of variations in tooth forms for future tabulation and comparison.

Copies of the blank and example records, have been sent to members of the section, and some others, in the endeavor to have the preliminaries of the proposed examination as fully considered as was practicable prior to its presentation to the association.

Since our arrival here, Dr. J. J. R. Patrick, of Illinois, has been invited by the section to take full charge of the tabulation of crania contemplated by the association. The association is to be congratulated upon obtaining the consent of Dr. Patrick to conduct these investigations.

I have pleasure in laying before you a bibliographical résumé of the contributions in all languages to the literature of the subjects of dental physiology and etiology within the past year so far as they could be collected from the files of the *Dental Cosmos*.

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SECTION VI.—CONTINUED.

The Hillischer Dental Notation, with Indices.

PAPER BY W. S. HOW, SECRETARY OF THE SECTION.

In the *Dental Cosmos* for April, 1885, attention was editorially directed to the subject of "symbols for the graphical designation of the human teeth in their several positional relations after eruption, providing also for the record of defects in, operations on, substitutes for, or malpositions of individual teeth," with special reference to the Hillischer system, which was particularly described, and illustrative examples given.

The subject received in this country no attention, but in other countries there have been noteworthy endeavors to formulate a scheme, and at the International Dental Congress in Paris last year a system of dental stenography was suggested by Mons. Grosheintz, of Paris, with the hope of its becoming international. The congress nominated Drs. Grosheintz, Dubois, Schwartz, Trallero and Cunningham a commission to consider the subject and report.

In a paper read before the Odontological Society of Great Britain, and published in the *British Journal of Dental Science* of March 15, 1890, Dr. George Cunningham, M. A., L. D. S., D. M. D., reports the proceedings and the mode of notation recommended by the commission, which was unanimously adopted by the congress. In order to bring the subject fully before this association, Dr. Cunningham's paper is subjoined entire, premising that it was also published in the *Ohio Journal of Dental Science* for May, 1890.

THE INTERNATIONAL DENTAL NOTATION.

At the International Dental Congress held in Paris, September, 1889, Mons. Grosheintz, of Paris, made an interesting communi-

cation entitled "Dental Stenography," and in which he suggested certain symbols which he hoped to see become international, so far as the dental profession was concerned. The main features of the communication may be briefly summarized as follows:

1. He proposed to represent the teeth by the first letter of the Latin words which are ascribed to them; for instance, for the bicuspids he employed "B" for the first and "b" for the second, and the same for the incisors, and so on.

2. Two lines, one horizontal and the other oblique from above or below, would serve to designate by the opening of the angle the right side or left, and by the superior or inferior position of the oblique line to which of the two jaws the tooth belongs.

3. The temporary teeth (*dents caduques*) are designated in the same way, with the addition of "c" as exponent.

4. Then by the aid of the figures 1, 2, 3, 4, placed according to the case after the denominative letter, the degree of caries is indicated.

5. The surfaces attacked by caries are also designated by letters.

6. He also suggests a series of abbreviations to designate the disease, the medicament, and the materials employed in filling.

Mons. Dubois, of Paris, whilst strongly supporting the objects sought to be attained by Mons. Grosheintz, criticised very strongly his symbols, more especially those devoted to the teeth. He then explained the method which he had adopted and recommended in his book, *Aide-memoire du Chirurgien-dentiste.* This method will be explained presently.

Mons. Schwartz, in criticising the symbols suggested, said that he, too, would prefer to see the teeth designated by figures instead of by letters.

I then had an opportunity of explaining the features of a system of notation which has been employed both by others and myself with considerable success for a considerable number of years. As a part of this system I had adopted the method of numbering the teeth employed by Dr. Finley Thompson, who began numbering from the right upper third molar, and counting straight on to the same tooth on the left side, and then continuing from the lower third molar on the left side to the one of the right side, thus finishing opposite where he had commenced. This was done simply to avoid confusion, since his chart of the teeth and the respective numbers attached were already in use in this country.

Candor compelled me to freely admit that this, of all the systems of numbering, was the very worst, and that years of constant daily use of the system had failed to give me the power of at once recalling with certainty the numbers indicative of certain teeth; whereas one was able to memorize the Dubois system by five minutes' study for as many, if not fewer, consecutive days.

Mons. Trallero, of Barcelona, proposed that, since the question was one of great interest, and several different systems had been suggested, a commission be nominated to consider the subject and report thereon. This proposition having been accepted, the commission was duly nominated as follows: MM. Grosheintz, Dubois, Schwartz, Trallero, and myself.

This commission, first of all, decided that it was better to adopt a system of figures rather than one of letters to designate the various teeth. It was found that all the various systems of numbering teeth by figures might be classified into three systems:

(*a*) The system of eight.

(*b*) The system of sixteen.

(*c*) The system of thirty-two.

It was resolved that any system of numbering by thirty-two was inconvenient, confusing, and difficult to memorize; it was therefore unanimously rejected.

The system of eight was warmly advocated. It consists of four groups of eight numerals, starting from the median line, the respective teeth of the upper or lower jaw being indicated by the position of the numerals above or below the horizontal line, and their situation relative to the median line being shown by a vertical line on the median line side of the figures.

The alternative (Hillischer's) system, which substitutes a point or period for the vertical line, was also considered.

The only system of numbering by sixteen which was considered was that proposed by Mons. Dubois, which consists of employing all the *odd* numbers from one to fifteen to consecutively represent the various teeth on the *left* side of the mouth, and the *even* numbers two to sixteen to represent those on the *right*, the lower teeth being distinguished by a line drawn underneath each numeral representing a tooth in the lower jaw.

It was the unanimous opinion that the system of eight numerals was certainly the easiest to comprehend and to memorize. It was considered, however, that while the Dubois system of sixteen was

slightly more difficult, it was yet sufficiently easy of comprehension, and would avoid in an ingenious manner the necessity of employing any point or vertical line before or after the numerals. It was determined, however, to adopt the principle of the horizontal line as indicating whether the teeth belonged to the upper or lower jaw, which only necessitates the use of the line above the numerals in the case of a tooth belonging to the lower jaw, since the simple numeral, without a line below it, is sufficient to indicate its being an upper tooth. It is evident that either of the systems of eight suggested necessitated three signs for each tooth; whereas this system of sixteen only requires one: the number itself for any upper tooth; and two—the number and a dash above—for any lower tooth.

The commission then recommended the adoption of the following system of numbering the permanent teeth:

	RIGHT.								LEFT.								
Upper	16	14	12	10	8	6	4	2	1	3	5	7	9	11	13	15	Upper
Lower	$\overline{16}$	$\overline{14}$	$\overline{12}$	$\overline{10}$	$\overline{8}$	$\overline{6}$	$\overline{4}$	$\overline{2}$	$\overline{1}$	$\overline{3}$	$\overline{5}$	$\overline{7}$	$\overline{9}$	$\overline{11}$	$\overline{13}$	$\overline{15}$	Lower

With regard to the temporary teeth, it was decided not to adopt the method of numbering employed in the Hillischer and other systems, which is thus expressed from the median line, 1, 2, 3, 6, 7, but simply to adopt the numbers 1 to 10 on the same principal as the permanent teeth, merely distinguishing the temporary tooth from its permanent successor by prefixing a decimal point in front of the numeral.

It is claimed by Hillischer and others that their system of numbering the temporary teeth avoids confusion by retaining the relative significance of the numerals of the permanent set. This claim is self-evident, so far as the incisors and cuspids are concerned, but not so for the temporary molars, since the gap between the numbers 3 and 6 is decidedly confusing. It was deemed, therefore, simpler and less confusing to utilize the same numbers for the deciduous molars as were employed for their successional teeth, the bicuspids, and not those of their mere namesakes.

The following system of numbering the temporary teeth was adopted:

	RIGHT.									LEFT.					
Upper.....	.10	.8	.6	.4	.2	.1	.3	.5	.7	.9	.....Upper
Lower.....	$\overline{.10}$	$\overline{.8}$	$\overline{.6}$	$\overline{.4}$	$\overline{.2}$	$\overline{.1}$	$\overline{.3}$	$\overline{.5}$	$\overline{.7}$	$\overline{.9}$	.....Lower

With regard to the symbols to indicate the surfaces of the teeth, it was decided to adopt those employed in the system of notation

which I have published. The only difficulty was with regard to the symbol representing the crown or masticating surfaces. This simply arose from the difficulty in finding an equivalent which would be the same in the various languages. The term "crown," or even the mere term "coronal," it was urged, is not employed in France* to indicate the masticating surface. It was, therefore, determined to substitute "t" instead of "c" for the crown surface, as being the corresponding mnemonic contraction for triturating surface (F., *Surface triturante;* L., *Superficies triturans*). It was also determined that, since labial and buccal are only two different names descriptive of the same surface, only one symbol, viz, "l" for labial, should be employed; the same remark equally applies to the terms palatal and lingual, and therefore only one symbol, viz, "p," has been adopted. The symbol signifying cervical is a segment of a circle; by accentuating the curve the sign can be made to graphically indicate the extent to which the cervical margin of the tooth is involved.

The following symbols were therefore adopted for describing the surfaces of the teeth:

T., triturating (synonyms: crown, coronal).
M., mesial.
D., distal.
L., labial (synonym: buccal).
P., palatal (synonym: lingual).
⌣, cervical.

By means of the first five signs and their obvious combinations, such as mesio-palatal, disto-lingual, and so on, it is easy to sufficiently define even any irregularly-disposed carious cavity; *e.g.*, a cavity extending from the mesial over the crown to the distal surface is sufficiently described by the letters m, t, d. If, instead of a single compound cavity, it is desired to indicated three separate cavities on these several cavities, the use of the colon is sufficient to distinguish the difference; thus, m : t : d :. The colon is always and solely employed to define the localization and the operative terms, and so prevent confusion with any adjacent symbols.

It was further determined not to suggest any further series of

* At the time of the commission, had I remembered that Dr. Andrieu had adopted the term "*coronale*" in his *Traite de Dentisterie operatoire*, p. 353, as applicable to "la surface triturante des dents postérieures," I should not have yielded so readily to what seemed a necessary change, since a cardinal factor in the success of any system must be its from any capricious changes.

abbreviations for the present, as it would be advisable to consider the various systems suggested at greater leisure than the present occasion afforded.

It was further recommended that some mnemonic system, such as that recommended by myself, was more likely to lead to satisfactory results than the system of arbitrary signs so commonly used in America.

This mode of notation, recommended by the commission, was unanimously adopted by the congress at its final session.

Despite the fact that this society, in common with other dental societies, has not hitherto devoted much attention to this subject, I think it is unnecessary to dilate upon the very obvious advantages of having some one carefully-considered system of notation accepted for common use. I trust you will agree with me in thinking that it is a matter of congratulation that the co-operate intelligence of the profession has at last been aroused to the urgency of united action in this matter, and thus made a beginning of reducing to uniformity and order the somewhat chaotic productions of the various individual intelligences which have found expression in occasional contributions to various societies and journals, not only in this country, but also in America, France, and Germany. I therefore recommend a trial of this international dental notation as being easy of acquirement, time-saving, and eminently practical. Its ultimate value will depend upon the extent to which it is adopted by the profession. Its value to the individual in keeping a record of his work, in communicating with an assistant, and in corresponding with another practitioner, is evident. But before such a society as this I would urge its value to science, if only from its help in transforming the crude, almost entirely commercial, entries of the day-book or ledger into the carefully-recorded facts of the case-book, the tabulation of which will certainly do much to remove the endless records of vague, unverifiable conclusions with which our scientific literature abounds.

In presenting for consideration a modification of the Hillischer system, time and space will not be taken to make comparisons which can best be made after the suggested system shall have been set forth in detail. It is a sufficient premise to quote the declaration of the commission that—

"It was the unanimous opinion that the system of eight num erals was certainly the easiest to comprehend and memorize."

The eight numerals are arranged and indicated as follows:

Beginning at the median line, which may be expressed by a vertical mark (but none is necessary), the permanent superior teeth of the *right* ride are designated by the numerals 1 to 8 in reverse sequence, separated by half-inch spaces, and accompanied by commas put close to and on the *right* sides of the several figures.

The permanent superior teeth of the *left* side are designated by the same numerals regularly arranged and likewise spaced, but provided with commas put close to the *left* sides of the several figures. These two groups represent, collectively and singularly, the sixteen superior teeth. The sixteen inferior teeth are represented by two identically like groups, furthermore discriminated as belonging to the inferior portion of the system by being put beneath dashes. To specify any permanent tooth it is only necessary, if an upper tooth, to write its numeral and put on its *right* side a comma, or to put its comma on the *left* side, as the case may be, adding a dash to indicate a lower tooth.

The deciduous teeth are represented by the proper numerals, with semicolons instead of commas to indicate the respective sides of the median line. The deciduous molars are represented by the numerals 7 and 8, because they are first and second molars of the deciduous set, and no confusion need arise if the mind be free from the error of classing them with their successors, the biscuspids.

In the following graphical expression of the scheme as thus far described, it is to be noted that the dashes have no relation to the superior teeth, which are clearly and sufficiently designated by the mere numerals; and this is made more obvious by showing first the generic formula for the teeth of the maxilla, each numeral being separated from the other by a hyphen, and each hyphened numeral representing the four teeth of its class.

Permanent generic formula, thirty-two teeth:

– 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 –

Then follows the distinctive superior formula wherein the upper teeth of both sides are denoted by mere spaced numerals, sixteen teeth.

Dual permanent superior formula, sixteen teeth:

1 2 3 4 5 6 7 8

The dual permanent inferior formula is expressed by the merely spaced numerals under dashes, sixteen teeth.

Dual permanent inferior formula, sixteen teeth:

$\overline{1}\ \ \overline{2}\ \ \overline{3}\ \ \overline{4}\ \ \overline{5}\ \ \overline{6}\ \ \overline{7}\ \ \overline{8}$

The specific permanent superior formula now takes shape by the affixing and the prefixing of the indicating commas.

Permanent superior formula, sixteen teeth:

8, 7, 6, 5, 4, 3, 2, 1, ,1 ,2 ,3 ,4 ,5 ,6 ,7 ,8

Every superior tooth is thus individualized so that it may be identified in character and location whenever its symbol is written or spoken.

Permanent inferior formula, sixteen teeth:

$\overline{8},\ \overline{7},\ \overline{6},\ \overline{5},\ \overline{4},\ \overline{3},\ \overline{2},\ \overline{1},\quad \overline{,1}\ \overline{,2}\ \overline{,3}\ \overline{,4}\ \overline{,5}\ \overline{,6}\ \overline{,7}\ \overline{,8}$

Here the same symbols put under dashes designate the several inferior teeth. For example, $\overline{,5}$ symbolizes the inferior left second biscupid, and will be read as *dash, comma, five.* ,5 symbolizes the superior left second biscupid, and will be read as *comma, five.*

The several formulas for the deciduous teeth are expressed as follows:

Generic deciduous formula, twenty teeth:

0 1 0 2 0 3 0 6 0 7 0

Dual deciduous superior formula, ten teeth:

: 1 : 2 : 3 : 6 : 7 :

Dual deciduous inferior formula, ten teeth:

: $\overline{1}$: $\overline{2}$: $\overline{3}$: $\overline{6}$: $\overline{7}$:

Deciduous superior formula, ten teeth:

7; 6; 3; 2; 1; ;1 ;2 ;3 ;6 ;7

Deciduous inferior formula, ten teeth:

$\overline{7;}\ \overline{6;}\ \overline{3;}\ \overline{2;}\ \overline{1;}\quad \overline{;1}\ \overline{;2}\ \overline{;3}\ \overline{;6}\ \overline{;7}$

These formulas provide for every form of expression necessary for the specific description of the human deciduous and permanent teeth in whatever distinctively normal relation and grammatical situation it may be requisite to write or speak of all or each of them *in situ.*

If it shall seem that the scheme is too elaborate or complex for ordinary and facile comprehension, the seeming difficulties will disappear under careful scrutiny, with such brief consideration as may suffice for a complete grasp of the foundation principles of the really simple symbols. A short period of practice will verify that

conclusion and dispel all doubt of the precision and immediate adaptability of the Hillischer notation.

It remains to provide suitable abbreviations for the supplemental description and indication of dental abnormalities, their correction, substitution, or repair. This undertaking is a difficult one from any point of view, and the subjoined scheme is submitted with a full knowledge of its imperfections and incompleteness, but the hope that it may stimulate efforts which will result in a practicable scheme is the sustaining incentive to its presentation. The notation with a modified series of abbreviations has been tentatively employed for recording the first series of pre-historic cranial observations and measurements specially undertaken by Section VI, and that work, when thus completed, will probably serve to practically prove the applicability of the system to the recording of scientific dental investigations and their tabulation for further study. That series of abbreviations is here supplied with interspersed supplemental abbreviations to furnish collectively a series that will in great part meet the requirements of the practitioner, as well as the investigator.

A :	Artificial.	M :	Amalgam.	v :	Vacancy.
a :	Abscess.	m :	Mesial.	W :	Wired.
B :	Bridge.	mg :	Missing.	w :	Worn.
b :	Buccal.	N :	Necrosed.	X :	Exostosed.
C :	Crown.	n :	Neck:	x :	Extracted.
c :	Coronal.	O :	Oxychloride.	Z :	Zylonite.
D :	Denture.	o :	Opening.	z :	Zinc Phosphate.
d :	Distal.	P :	Pivoted.	O :	Normal size.
E :	Erupting.	p :	Palatal.	⊖ :	Wide and short.
e :	Eroded.	pu :	Pulpless.	0 :	Narrow and long.
F :	Filled.	py :	Pyorrhea.	I :	Cusped.
f :	Fissure.	R :	Replanted.	+ :	Bicusped.
G :	Gold.	r :	Root.	Λ :	Tricusped.
ga :	Gutta-percha.	S :	Scorbutic.	□ :	Quadricusped.
I :	Implanted.	s :	Supernumerary.	⌂ :	Quinquecusped.
i :	Irregular.	sy :	Syphilitic.	′ :	Small. (Cavity, degree, or size.)
L :	Lost.	T :	Toothless.	″ :	Large. (Cavity, degree, or size.)
l :	Labial.	t :	Tartar.	‴ :	Very large. (Cavity, degree, or size.)
ll :	Lingual.	V :	Vulcanite.		

Capital letters have been chosen as indicative abbreviations for

words less frequently used than those represented by lower-case letters, and care has been taken that grouped abbreviations shall not in practice prove confusing by use as letters which may have differing significations when associated than when used singly.

Caries is present whenever a suitable positional index is used without a qualifying index or indices, and when the symbol of a single tooth is employed the indices may follow the symbol, as 7, d:c:m, which signifies that the superior right second molar has carious cavities in its distal, coronal, and mesial surfaces; but if these cavities were confluent, the colons would be omitted and the expression be 7, d c m. If in an inferior left second molar the distal and coronal cavities were confluent, and the mesial cavity was separate but extended into the tooth-neck, the expression would be ,$\bar{7}$ nm:cd.

When an entire case is to be graphically stated so that the situation may be taken in at a glance, the indices are best placed over the superior and under the inferior symbols:

cf.	d.	c:m.		c	nl.		m.	m.		nl.		m:c.	m.		c·
8,	7,	6,	5,	4,	3,	2,	1,	,1	,2	,3	,4	,5	,6	,7	,8
8,	7,	6,	5,	4,	3,	2,	1,	,1	,2	,3	,4	,5	,6	,7	8,
cf.	mg.	cd.		c.	m.								c:d.	mg.	cf.

In this case the superior right third molar has a coronal fissure cavity; the second molar, a distal cavity; the first molar, a coronal and a mesial cavity; the second bicuspid, normal; the first bicuspid, a coronal cavity; the cuspid, a cervico-labial cavity; the lateral, normal; the central, a mesial cavity; the left central, a mesial cavity; the lateral is normal, the cuspid has a cervico-labial cavity, the first and second bicuspids are normal, the first molar has a mesial and a coronal cavity, the second molar, a mesial cavity and the third molar a coronal cavity.

The inferior right third molar has a corono-fissure cavity, the second molar is missing, the first molar has a corono-distal cavity, the second bicuspid is normal, the first bicuspid has a coronal cavity, the cuspid a mesial cavity; the lateral, central, left central, lateral, cuspid, first and second bicuspids, are normal, the first molar has a coronal and a distal cavity, the second molar is missing, and the third molar has a coronal fissure cavity.

This example shows how much descriptive matter may be condensed into five lines of symbols with their indices.

The following example will illustrate some of the practical applications of the symbols in each of their several groups, associated with exponents from the series of indices:

-1- The four permanent incisors.

-6- The four permanent first molars; and it is mnemonically helpful to note the coincidence that these are the molars of the sixth year.

-8- The four permanent third molars.

3 The two superior permanent cuspids.

4 The two inferior permanent first bicuspids.

°6° The four deciduous first molars.

:7: The two superior deciduous second molars.

:2: The two inferior deciduous laterals.

d: c: FG

6, The superior permanent right first molar, distal and coronal cavities filled with gold.

dcm: FM

,7 The inferior permanent left second molar, confluent distal coronal mesial cavity filled with amalgam.

mpu: alo

,1 The superior permanent left central, mesial cavity, pulpless, abscess, labial opening.

I

4, The superior permanent right first bicuspid implanted.

ACP

,3 The superior permanent left cuspid, artificial crown pivoted.

L E

6; 4, The deciduous superior right first molar lost, and the permanent first bicuspid erupting.

mFga

,4 The permanent inferior left first bicuspid, mesial cavity filled with gutta-percha.

cFga

; 6 The deciduous superior left first molar, coronal cavity filled with gutta-percha.

fFG

,5 The permanent superior left second bicuspid, fissure-cavity filled with gold.

A A A A A A A A A CGz. Pz. Pz. CG. CGz.

6, 5, 4, 2, 1, ,1 ,2 ,5 ,6 BDG. 7, 3, ,3 ,4 ,7 The artificial superior right first molar, second and first bicuspids, lateral, central, left central, lateral, second bicuspid, and first molar bridge denture of gold fixed on the right second molar gold-crowned, the cuspid pivoted, the left cuspid pivoted, and the second molar gold-crowned; all secured by means of oxyphosphate cement.

The desire to limit the list of indices to the least well-working number prevented the early introduction of precisely definitive signs, but it was finally found that the common marks ′, ″ and ‴, would quite clearly indicate either the presence and relative sizes of cavities, the relative sizes of sound teeth, and parts of teeth or the degrees of their departures from normal characters, conditions, or their aberrations. Other signs have been added to express the fact of variation from or accordance with the typal form in cusped teeth. A few illustrations are subjoined.

Δ′	□	□″						
c′.	d′:cf′.	d″:c″:m′.	CLr.	O.v′.	″.	s′0′p.	○.	‴+:f′np.
8,	7,	6,	5,	4,	3,	2,	2,	1,

We have here described the permanent superior right third molar of small size, tricusped in character, and having a small coronal cavity; the quadricusped normal-sized second molar, small distal cavity, and small coronal fissure cavity; the first molar large quadricusped, large distal cavity, large coronal cavity, and small mesial cavity; the second bicuspid has lost its crown, and only its root remains; the first bicuspid is normal, a small vacancy existing between it and the large but duly proportioned cuspid; or supernumerary lateral of long, narrow cusped form, occupies a palatal position between the cuspid and the wide and short lateral; the large and bicusped central has a small fissure cavity in the palatal part of its neck. This case is, of course, conjectured for merely illustrative purposes.

The ten deciduous superior teeth, with the sixth-year molars present, would be expressed as follows:

6, 7; 6; 3; 2; 1; ;1 ;2 ;3 ;6 ;7 ,6

The same denture would be represented as subjoined by the Dubois-Cunningham system :

12 .10 .8 .6 .4 .2 .1 .3 .5 .7 .9 11

A careful comparison and alternative trials of the two systems will enable one to decide for himself their relative readiness and efficiency in use.

Nothing short of repeated and general demonstrations by investigators and practitioners can fairly determine the actual feasibility of the Hillischer, or any other system of dental notation, with its appropriate indicating letters or signs.

SECTION VI.—CONTINUED.

Report on Implantation.

BY LOUIS OTTOFY, OF THE SECTION.

Last year this section presented a report and records of cases of implantation. The extent and value of this operation, and the position which it should occupy in dental practice, can be decided only after careful observation of the cases for a sufficient number of years.

One of the gentlemen who made a report last year* presents this year an additional report on observations made during the year. By the loss of several of the earlier cases reported on, last year, the percentage of successful cases is reduced from 73 to 60. Some cases retain all the appearances of perfect health for a long time, and then suddenly loosen and drop out, within a week or ten days; absorption of the root (and of the root filling) being invariably the condition presented.

The earliest cases have failed after three years and five months of a kind of service to which no character of artificial substitute can even be compared. Whether that length of time is sufficient to justify the operation must be determined by the patient and the operator. In connection with dropping out of these teeth in one case, the following condition was noticed: A tooth which had been in perfect condition for three years and five months, suddenly became loose and dropped out, the root being apparently absorbed in the usual manner. Within two weeks after the loss of the tooth an impression was taken for the purpose of making an artificial substitute, the latter was constructed in such a manner that the plain tooth impinged on the gum until it made the cup-shaped depression which gives a natural appearance to these teeth. The plate however would not entirely fit in its place, and an examination

*Dr. Louis Ottofy, of Chicago.

revealed the fact that the artificial tooth, after making the cup-shaped depression in the gum, came in contact with the root of the implanted tooth, which was supposed to have been entirely absorbed. The gutta-percha filling in the root-canal was also visible. In this case the absorption commenced at the neck of the tooth and cut the crown off, leaving the root in the bone.

It may also be added that inflammation of the gingivæ or of the peoriosteum of the bones or teeth in the vicinity of implanted teeth is almost certainly fatal to their existence.

Dr. M. H. Fletcher, of Cincinnati, has made certain observations on the subject of implantation. His views may be briefly summarized:

He implanted in the external part of the maxilla of a goat seven teeth, and in the hind legs two teeth, making in all nine teeth, performing the operations at different times. One year after the first and four months after the last operation the goat was killed, and the bones containing the implanted teeth were prepared for the microscope. Those who are interested in this subject can see the photomicrographs of these specimens. Some of the teeth disappeared completely, only the gutta-percha remaining; others seem to have been completely decalcified. In some the cementum seems to have become organized and some were thoroughly ankylosed to the adjacent bone, while in some the cementum seems to have progressed in growth at the expense of the dentine. He does not believe the presence of cementum to be essential to success, but on the contrary thinks it detrimental.

He further concludes that the resorption and rebuilding of the various tissues of the body necessitate the absorption of the roots of implanted teeth and thereby their loss. As a temporary replacement of lost teeth the operation of implantation is justifiable to those who comprehend it.

DISCUSSION.

Dr. Patrick: What I have to communicate is simply supplementary to the chairman's report; you can form but little idea of the extent and importance of the proposed examination that has been so long delayed, until some of the work is actually done.

We desire the co-operation of as many as possible in the prosecution of this investigation. It is not a subject in which one man

can reap all the honors that may be connected with it, for it is a subject eminently fitted for investigation by the many. I have been engaged in the investigation of this subject for twenty years and have accomplished very little owing to the character of the work, and I therefore wish to impress upon your minds that what would take twenty years for one man to accomplish can be done in one year by twenty men, when done systematically. (Dr. Patrick read his report and tables).

Now, gentlemen, if we earnestly prosecute this examination of prehistoric crania that are already collected and properly cared for in the archælogical museums of our country, our profession will have an opportunity for the first time in its history of returning something to the surgeon and physiologist for what they have done for the dental profession; then is it not the duty of every man who prides himself in his profession to lend a helping hand in this investigation?

For many reasons it would be improper for one person to travel over the country visiting the public and private collections of prehistoric crania with the view of collecting facts (not verified) that are to serve as guides for the many. If I go where there is a collection of human crania I shall solicit every reputable dentist in the vicinity to assist in the examination, then we will have a cloud of witnesses to the truths brought forth in the examination; and we will find when these tables are collected and digested that they will either prove or disprove a great many theories.

The results of this investigation may clip the wings of some who love to fly and soar above the earth, but that we cannot help, for they must be content to walk upon *terra firma* where they properly belong.

Dr. Ottofy: It was the intention of the section to secure a report from those who had implanted teeth, and to continue to make annual reports to this association on that subject. Last year Dr. Smith secured quite an extended report. If this could be kept up from year to year we should eventually know the value of the operation of implantation. Unfortunately I have received reports from but two men. I, myself, have to report additional failures to those reported last year, bringing down the percentage of success to 60, when last year it was 73. The oldest case on which I can report remained in the mouth three years and five months. I do not know of any one who claims cases standing a longer period

than that, except Dr. Younger. In all of them the only cause that could be assigned for failure was absorption. In one case which remained in three years and five months the tooth was in a perfectly healthy condition from the time it was implanted until June of this year. The tooth then immediately became loose, and in less than a week had dropped out. An artificial substitute was made for the patient, using a plain tooth, making it so long that it would impinge into the gum, with the intention of making a cup-shaped depression. After the patient had worn the plate three or four days it would not go into its position, and she came to see about it, and then I discovered that the entire root, including the gutta-percha, of the implanted tooth was still there. The absorption of the root evidently had commenced at the neck, virtually cutting the tooth off, leaving the root of the implanted tooth in the socket. Dr. Fletcher has made some interesting experiments in connection with this subject which were presented at the International Medical Congress in Berlin. He has implanted nine teeth in the extreme lower portion of the maxilla of a goat, and two of them into its hind leg, implanting the teeth and then drawing the skin over them so as to have them perfectly enclosed. He has examined them at various intervals.

The oldest one at the time of the examination was a little over a year old, and the last one four months old. He describes very carefully the condition of these teeth when the goat had been killed, and sections made of them, and we have here photo-micrographs of the plates made from the sections. In all of them absorption had taken place, in some to the extent that nothing but the gutta-percha had remained. His idea, based upon his observation, is as follows: He believes that the building up and the destruction of tissue goes on at all times; that this extends to the implanted tooth, but that the difference between the living tissue and the dead implanted root is, that the living tissue replaces itself, while the dead tooth is not able to do it; that therefore, when absorption of it takes place the root is simply gone and nothing remains to hold it in position.

Dr. A. H. Thompson: With regard to the question of notation, it has been apparent for some time that we ought to have some uniform system, and it is not material what system is adopted so that it becomes uniform. I would like to see some steps taken toward having the association adopt a system as official, and as recognized throughout the United States, which shall enable us to

communicate to each other in our investigations. It is probable, however, that the time is not yet ripe for a movement toward uniformity by the appointment of a committee to prepare a scheme. But if the workers in this matter will continue their labors they can in a few years furnish us a system that will answer all purposes. Such a system must be arbitrary as there is no natural system on which to base it.

DR. H. A. SMITH: I think, as Dr. Thompson remarks, a system should be adopted, but it should be more far-reaching. France and Germany and other foreign countries, are at work upon a system of notation which they can uniformly adopt. If we, in correspondence with them, could adopt the same system it would be very easy to communicate with each other upon subjects relating to dental science. It may be too soon to appoint a committee, and yet the paper just read I think will call attention to the need of some uniformity in that direction.

DR. P. T. SMITH: I have a method that seems to me a very clear and useful one. It consists of perpendicular and right angle lines which indicate all the teeth with some variation, indicating also the surface affected by and the character of the disease, the material with which the teeth are filled, and various operations that are performed upon the dental organs.

(The doctor illustrated his system of notation by diagrams upon the board).

DR. OTTOFY: I desire to say a few words in regard to the paper of Dr. Patrick and in regard to the work of the section by which it was presented. Dr. Patrick has prepared simple, plain and easily comprehended tables and blanks, and the section has made arrangements so that those tables and blanks will be printed and given to those who are prepared to undertake the investigations. It would be well for those gentlemen living in cities where there are collections, to either notify Dr. Patrick or the chairman of the section whether they are willing to examine them, and it will be well before the blanks are ready to be distributed to ascertain the number of crania that will be available for examination, because it is the intention of the section to go on rapidly with this work, and to present a report of the number examined at the next meeting. It will only include at this time the prehistoric crania. There are in all probability collections of crania in small cities, owned by private persons, which could be examined and tabulated.

DR. NOBLE: I recognize the very great value of the labor of Dr. Patrick in this direction, and we shall be able, if all will take hold of this work in the proper spirit, to have such a report as we have never had before. In the city of Washington we have collections that will require a great deal of time for examination. I have been talking with Dr. Patrick and I am willing to take hold of this work in my city, and I think I can get the labors of some of my boys to assist me in going very carefully through the museums and collections in Washington.

SECTION VII.

Anatomy, Pathology, and Surgery.

Report by M. L. RHEIN, Secretary of the Section.

This section on Anatomy, Pathology and Surgery has not been long enough one of the working parts of this association to warrant saying whether it has been successful or not. Up to the present time it has not received the support and encouragement it is entitled to. Our section makes an appeal for more scientific research. It is not creditable to the American Dental Association that students of to-day have no better means of studying oral anatomy than was obtainable twenty years ago. The demand is imperative for a text book giving in detail the gross anatomy of each tooth and its relation to all surrounding tissues; and it would be very fitting if such a work were instituted under the auspices of this section.

Why is it that so many of the profession hesitate to take charge of cases of oral surgery? The answer is simple. They are afraid, because they recognize the fact that their knowledge of the anatomy of the oral cavity is defective.

The colleges recognize the importance of this work by giving clinics in oral surgery. They have long since determined that watching the operations of the professors on operative dentistry is not sufficient to make good operators; consqeuently the importance placed on the infirmary work accomplished by the students.

The colleges must follow the same line of reasoning in teaching oral surgery. This can only be accomplished by having the students perform these operations themselves under the direction of anatomical demonstrators.

In conclusion we beg to report for consideration by the associa-

tion a paper by your secretary, M. L. Rhein, on "Amputation of roots as a radical cure in chronic alveolar abscess: (in pyorrhœa alveolaris complicated by alveolar abscess.")

Also a paper recommended to our section by the committee on voluntary essays, "On the occasional origin of true chronic alveolar abscess from teeth with living pulps," by Arthur C. Hugenschmidt, of Paris, France.

SECTION VII.—CONTINUED.

The Occasional Origin of True Alveolar Abscess from Teeth with Living Pulps.

VOLUNTARY PAPER BY ARTHUR C. HUGENSCHMIDT, PARIS, FRANCE.

It is generally admitted as a fact throughout dental literature that a *true chronic* alveolar abscess is *always* due to the products originating from the decomposition of a *completely devitalized* tooth pulp, which products set up an inflammatory process in the region of the apical foramen and then finally find their way to the surface in one or more directions.

The object of this short paper is to indicate that a dead pulp is not at all a necessity to bring on a true alveolar abscess and that a tooth with a living pulp, a pulp which has retained all its normal physiological functions, such as sensation to extremes of temperature, heat and cold, sensibility of the overlying dentine, etc., can be the source of a chronic suppurating inflammation, which in its consequences and clinical aspect is absolutely similar to an abscess due to a completely devitalized tooth. Such cases are rare but they do exist. I shall give the three following histories:

The first observation I made was in 1883. The tooth, a first right upper molar, had felt uncomfortable to the patient for some time. I found on examination the existence of a well developed typical alveolar abscess, immediately opposite the anterior buccal root of the molar, from which a small quantity of pus was continuously discharging. Although the tooth had never been filled, I found it somewhat dark in appearance and more sensitive on percussion than any neighboring teeth. I came to the conclusion that I had to deal with a dead tooth and decided to trephine it. But, as soon as I had passed through the enamel, the patient complained of that particularly severe pain often encoun-

tered at the junction of the enamel and dentine. I tried to go deeper but the pain becoming more marked I felt sure I had made a mistake, so I closed the tooth temporarily with gutta-percha. At the next sitting I made an exploratory trephining in both the neighboring teeth; but here again I fell upon sensitive parts. I then concluded that I probably had to deal with a suppurating periosteal inflammation of external origin, traumatic or otherwise. I therefore enlarged the fistulous tract and then scraped the part of bone I came in contact with, which was in a necrosed condition. The abscess closed for a short time but soon reopened again, and when the patient returned, he directly pointed to the first molar as having been somewhat annoying a few days before. I hesitated no more; after having taken out the gutta-percha filling, I drilled as deep into the tooth as possible and applied an arsenical paste. The next day the pulp cavity was opened and the pulp was still sensitive and especially so in the anterior buccal root: profuse bleeding attended the removal of the pulp filaments from their respective roots; from the anterior root the pulp was easily removed, the root and foramen being unusually large. On removing the pulp from this last root I found it mixed with pus, and about its middle portion it looked to me as if some pathological process had been going on. The roots were treated antiseptically and the abscess disappeared and never returned, the tooth being in position to-day.

The second case, I now mention, dates back two years—in one way it does not properly belong to the class of cases we have in view, still it may be interesting to mention it.

The abscess was situated opposite an upper second molar tooth of the left side, on a level with the end of the roots, at an equal distance between the anterior and posterior buccal roots. The tooth had a very large anterior proximal cavity extending into the pulp chamber. The palatal and anterior buccal roots were completely devitalized, while the posterior buccal branch of the pulp was highly sensitive. Both the first named roots were antiseptically treated, so as to render them completely aseptic, while the posterior buccal root with its living nerve was left untouched. No change in the abscess occurred; it continued to discharge; every morning a gum boil presented. Finally I devitalized this posterior root, and on removing the pulp, I produced a very severe pain. Pus was found to surround the upper portions of the pulp. The

apical foramen was also very large. The roots were carefully filled a few days afterward, and the abscess disappeared.

The third case is the most interesting one. The patient, a young lady of 17 years, had had her right central incisor filled with gold some five years before. Two years ago I saw her for the first time, for an alveolar abscess arising from a devitalized second bicuspid; all the other teeth looked perfectly well.

A year ago, in July, 1889, the patient came to me complaining of some uneasy feeling about her right central incisor. On examination I felt opposite the end of the root of that tooth a slight projection, which gave me the sensation of a blind alveolar abscess. Although this tooth already looked to me somewhat darker than its neighbor, I treated it with counter-irritants, aconite and iodine. A few applications took away the uneasy feeling, and the patient was discharged, although that well-marked projection still existed. The tooth kept quiet for some time, and in February, 1890, when I saw the patient for other operations, I found the projection more prominent; it was the size and shape of a small pea, still nothing was done to it at the time. In April last the patient returned, stating that the abscess had burst a few days before. Physical appearance of the parts unmistakably indicated alveolar abscess, plus the dark appearance of the tooth, so I decided to trephine it.

I found sensitive dentine as soon as I had passed the enamel, moreover the tooth was sensitive to hot or cold water. I drilled as much as I could and then applied an arsenical paste, discharging the patient till the next day. When she returned, sensation was still very marked, so I gave her an injection of cocaine which enabled me to reach the pulp cavity; as soon as I withdrew the drill a drop of pus, soon followed by blood, came out. Notwithstanding the injection of cocaine, when I tried to extirpate the pulp I I found it highly sensitive, and it was only after having made an injection directly into the pulp canal and waited a few minutes, that I was able to remove the pulp altogether; in this case again the apical foramen was unusually large. At the end of a week all trace of abscess had disappeared and two weeks after the extirpation of the pulp the tooth was filled and has given no trouble since.

The facts which have just been enumerated tend to show that a true alveolar abscess can occur from a living tooth.

The primary cause or origin of such an abscess will always reside in the pulp; it will be a local circumscribed pulpitis in any

region of the substance of that organ, and as I have remarked, the apical foramen being so unusually large, the products of inflammation pass out easily into the surrounding tissues, making their final exit on the surface of the gums, without causing great systemic or local disturbances.

In the last case mentioned the primary origin of the trouble was probably a local pulpitis due to a small gold filling, inserted when the young lady was only twelve years old: the patient being of a well marked lymphatic temperament, the calcification of the roots being not completed, an arrest of development occurred, which accounts for this extremely large foramen.

In the two other cases which were observed in persons over 30, another explanation might be given; the primary irritation of the pulp from whatever cause, always results in hyperæmia of the organ, which if long-continued produces an hypertrophic condition of the pulp, resulting later in absorption of the inner part of the root, causing an enlargement of the pulp cavity, a pathological condition which has been clearly defined by our distinguished confrère, Dr. G. V. Black.

For an alveolar abscess to be present in a living tooth, it is absolutely necessary, I think, that this enlarged condition of the foramen at the end of the tooth be present. Otherwise, should the foramen be normal, any local pulpitis would rapidly produce a congestion of the pulp and its rapid strangulation at the apical foramen. Only one other condition would prevent this death of the pulp by compression, and that is where the pulp was exposed in the crown of the tooth. In that case the inflammatory products could escape by this external opening. It will be noticed that hardly any pain was experienced in any of these cases, which is again explained by the enlarged condition of the foramen, which allows no compression of the pulp.

In a diagnostic point of view the only signs we possess are: First, the presence of an alveolar abscess immediately opposite the end of the root of a tooth. Secondly, a slight change in the color of the tooth—a darker hue. Thirdly, the patient indicates that tooth, and that tooth only, as having been the seat of slight annoyances but no pain.

These three signs being present, one need not hesitate to trephine the suspected tooth, even if the tooth is sensitive.

Finally the conclusions arrived at are:

1. That a true chronic alveolar abscess does not always arise from a completely devitalized tooth.

2. That a living tooth can be the source and only origin of a true alveolar abscess.

3. That an alveolar abscess in a *living* tooth can only occur if the apical foramen is abnormally large.

SECTION VII.—Continued.

Amputation of Roots.

Paper by M. L. RHEIN, Secretary of the Section.

The removal of a portion or the whole of the root of a tooth has long been advocated by a few men of our profession, as a means of restoration to health of that class of teeth which do not yield to milder remedial treatment.

Like many other operations in oral surgery which naturally come within our sphere of practice, it seems to have received little or no attention from those who have made our literature; and text books are singularly silent concerning this important method of procedure.

In the majority of cases the operation is one presenting little difficulty. There are no dangerous anatomical points to be avoided except when working under the Antrum of Highmore or in the region of the mental foramen.

The instruments required are a sharp spear-shaped drill with which a hole is drilled through the process, passing through the root on a line with the canal. This is followed by a new fissure bur which worked laterally in both directions readily severs the end of the root.

Usually no anæsthetic is required. We must, however, occasionally resort to one where the operation is of considerable length and very painful. Under such circumstances a physician should be summoned who will administer an anæsthetic, leaving the dentist undisturbed in his surgical interference.

Chronic Alveolar Abscess.

It is well known that the longer an alveolar abscess exists the greater the damage to the surrounding tissue. The injury that the

general system receives from the absorption of a certain amount of pus must not be ignored.

About the apices of the root is found an ever-enlarging zone of diseased tissue. This can well be called the apical space, and acts as a hot-bed for the formation of pus, ichorous or not, as the case may be. The continued effect of this is to denude the apex of all circulatory supply, and in time to bring about a necrotic condition of the root which gradually extends toward the crown of the tooth until eventually the entire root becomes necrosed. Treatment through the canal of the root for the cure of this disease is useless after necrosis has once attacked the apex. The operation of entering through the gum and burring the diseased tissue is uncertain in its results. Having filled the root or roots, the diseased portion is excised. This is at once followed by the vigorous use of the bur in the surrounding pathological tissue, and an immediate and radical cure is the result. All that is requisite is to see that the operation has been performed under true aseptic conditions, and that the parts are kept so until the wound has entirely healed.

CASE I. Mr. H., æt. about 30, presented in 1882 to have his mouth put in good order. A very long and firmly-embedded root was all that remained of the right superior cuspid. As far as could be ascertained the crown had been broken off for some years, and at intervals the root had given rise to considerable pain. There was no evidence of any abscess. Having thoroughly cleansed the canal, the apex was found to be open, and the root slightly absorbed around the edges. A 40 per cent solution of chloride of zinc was pumped through the apex, which was then sealed with chloropercha one-third of the length of the root, and the remaining portion was filled with oxyphosphate of zinc.

Ten days later the patient returned, suffering severely from all the symptoms of alveolar abscess, except the swelling. The external parts appeared about normal, and it seemed impossible to bring about resolution. The temperature of the patient was now above 100° F., and a diagnosis was made of blind abscess, with slight septicæmia. The patient was at once put on tonic and antipyretic treatment, and it was determined to amputate the end of the root.

Chloroform having been administered, an incision was made in the gum over the apex of the root and a piece of tissue about three-eighths of an inch square was removed. A spear-shaped drill was then passed through the process and with a new fissure-bur one-

eighth of an inch of the apex was severed from the rest of the root. It was with great difficulty that this was removed, and not until a considerable portion of the alveolus had been drilled away. Attached to the root was a sac about half an inch long. The entire space was then thoroughly burred. It was washed out with a carbolized solution and allowed to heal under iodoform dressing. Had we our present knowledge of the various germicides, carbolic acid would have been discarded for something more efficacious. A crown was subsequently attached to the root and is doing good service to-day.

CASE II. Miss S—,aet. about 18, came in 1887 to have an alveolar abscess treated. A year previous she had the right superior first bicuspid filled by another dentist. Arsenic had been used to devitalize the pulp, and the roots and the crown were then filled. An alveolar abscess, having a fistulous opening on the buccal side, made its appearance within a few weeks and had been under treatment at least six months when I first saw her. The old fillings extending to the apices of the roots were removed and then renewed in order to be certain that the roots were properly filled.

The opening in the gum was then enlarged with a tent of cotton saturated with aromatic sulphuric acid; this was allowed to remain in position about four hours. On the return of the patient m. xx of a four per cent solution of cocaine hydrochlorate was injected into the gum on both the palatal and buccal sides. A small section of gum near the end of the root was then removed from the palatal side. By means of a spear-shaped drill, followed by a fissure bur, the end of the palatal root was amputated through the space made on the palatal side, and the buccal root was similarly operated upon through the opening on the buccal side. The two fragments were easily removed. The entire apical space was thoroughly drilled and sprayed with a solution of bichloride of mercury in hydrogen peroxide. Two iodoform tents were placed in position, one in each opening; they were reduced in size each day until the wound had entirely healed.

CASE III. Miss A—,æt. about 20, presented herself in 1888 to consult about the superior right cuspid. The tooth was pulpless, had a large posterior approximate filling which had been inserted four years previously in Vienna. An alveolar abscess had made its appearance soon after. Her dentist had drilled a small opening leading to the pulp canal above the neck of the tooth, in order to

give vent to the mephitic gases. The abscess had certainly become chronic, as a fistula on the labial side some distance below the apex of the root was constantly discharging pus.

After removing the filling the canal was found filled with the remains of the pulp, which, with the exception of some few shreds, was in a watery condition. The apex was found to be so badly absorbed that amputation was decided upon. The canals were first thoroughly filled. A hypodermic injection of m. xx of a four per cent solution of cocoaine hydrochlorate was then administered. The diameter of the fistula was considerably enlarged and the upper one-fifth of the root amputated. It became, however, a very difficult matter to remove the diseased portion. After drilling away a large amount of the aveolus it was still impossible to remove the end of the root. It was then decided to anaesthetize the patient, and as she was somewhat exhausted she was dismissed, after placing in the wound a tent of cotton saturated with aromatic sulphuric acid, and she was ordered quinæ sulphas gr. ij every three hours. On the following day chloroform was adminstered and the cavity had to be considerably enlarged by drilling when the end of the root was finally removed. These wounds all heal rapidly when the seat of the trouble has been removed and there should be no fear of making a large opening, especially when it has been necessary to resort to anæsthesia. In this case the density of the socket around a very long and tapering root rendered a very large opening imperative.

The wound healed rapidly under aseptic treatment and all that indicates the presence of the operation to-day is a very slight thickening of the alveolar plate at that point.

The record of these few cases is sufficient to indicate the absolute cure which follows this operation in chronic alveolar abscess and when it is compared with the uncertainty of every other method it is not unreasonable to ask: Why is it not performed more frequently?

PYORRHŒA ALVEOLARIS COMPLICATED WITH ALVEOLAR ABSCESS.

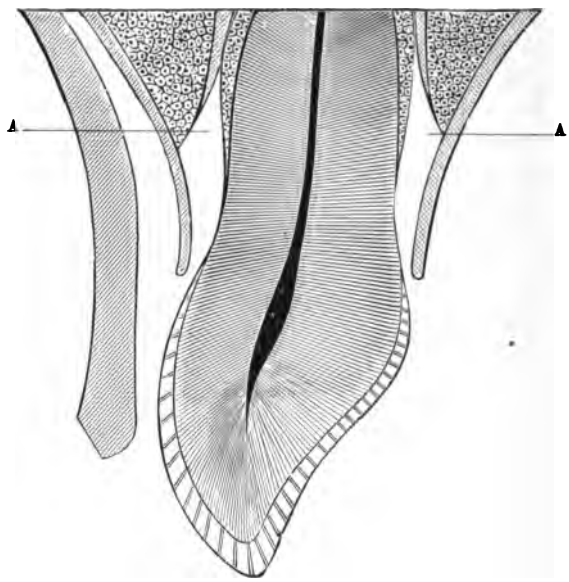
One of the worst conditions that we meet with in the various aspects of pyorrhœa alveolaris is where through the ravages of the disease, death of the pulp has ensued and there is added to the original septic matter the pus from the broken-down pulp. This condition generally takes place without any warning to the patient;

in fact it is impossible to learn at what time death of the pulp took place.

The powerful nature of the double septic condition soon causes absorption of the end of the root to progress more or less rapidly so that the purulent matter finds a free escape from the root and passes out through the channel furnished by the pyorrhœa pocket.

Consequently the diagnosis of such a pulpless tooth becomes a very difficult matter. The color remains good, even the electric mouth lamp generally fails to indicate that the pulp is dead,

FIG. 1.



A, pyorrhœal pocket.

because the canal is filled with purulent matter of such a watery consistency that it is rendered as translucent as though traversed by a living pulp. The only reliable diagnostic sign is to isolate the tooth by means of the rubber dam, and then to apply intense cold or heat. The smallest amount of the spray of chloride of methyl is admirably adapted for this purpose. We have all experienced the hopelessness of treatment of such teeth and a course of procedure which will enable us to preserve them for useful service may perchance be welcomed by the profession.

CASE IV.—Mr. P——, aet. about 36, came under treatment for pyorrhœa alveolaris in April, 1889. The disease was the sequence of an attack of African fever contracted during the first Stanley expedition. The history of the case is given on page 745, vol. x of the International Dental Journal. Though appearing hopeless at first sight, a thorough physical examination showed the organs to be in a healthy condition and a favorable prognosis was made. Treatment produced such marvellous results that in July I reported the case cured.

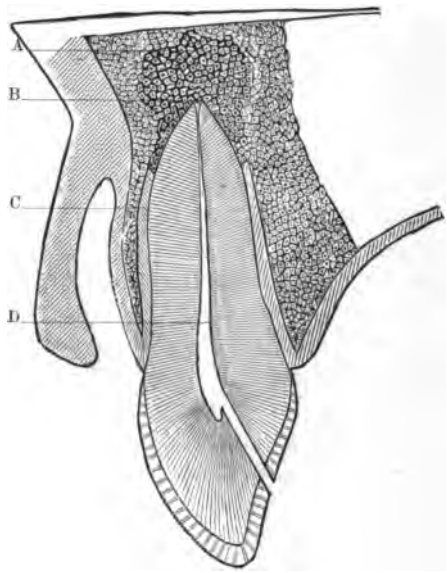
In December I saw the patient again and everything was normal except the superior right central incisor. The pocket had reappeared around this tooth and considerable suppurative action was discoverable. (Fig. 1.) The patient had been using an antiseptic spray continuously and the condition around the neck of the tooth was in marked contrast to the rest of the mouth which was normal. The pocket was given an extra vigorous treatment and the patient dismissed, and soon after the tract seemed to disappear and the parts to resume their normal condition.

A few days later he began to suffer intense pain from the tooth. Being a resident of Brooklyn, at night he went to a prominent Brooklyn dentist for relief. After hearing the history of the case he ground away a portion of the cutting edge of the tooth, hoping in this way to relieve the patient. He could not sleep that night and was at my office the next day. The gum about the neck of the tooth appeared to be in a normal condition. The tooth was very sensitive to tapping, color was normal, electric lamp showed no opacity.

High up near the apex of the root on the labial side could be discerned some distance under the surface a peculiar yellow spot, having an angry look about it. An incision was immediately made to this point, which at once allowed an exit for pus and at the same time brought relief to the patient. This space led directly to the root of the tooth, which was discovered to be considerably absorbed and surrounded by soft, carious tissue. It was of course impossible for the pulp to be alive. The rubber dam was adjusted and an opening drilled through the palatal surface into the pulp chamber. This was discovered filled with pus of a watery consistency, with some shreds of pulp tissue still existing. The canal was thoroughly cleansed with a solution of mercuric bichloride in hydrogen peroxide, the syringing of which caused the medicament to come

through the labial opening. The aperture at the end of the root was very large. The root was then filled with gutta-percha and covered with oxyphosphate of zinc. (Fig. 2.) The opening into the labial side was packed with a tent of cotton soaked in aromatic sulphuric acid. Tonic treatment was prescribed and an appointment made for the following day. At that time no alveolar process

FIG, 2.



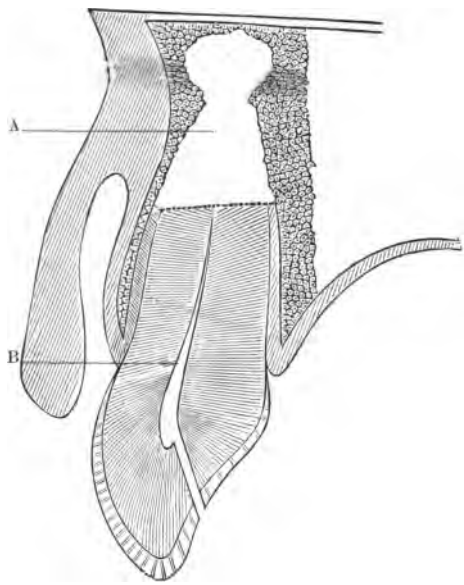
A, caries of bone. B, absorption at apex of root. C, pyorrhœal pocket filled in with new tissue. D, root canal filled.

interfering, by means of a fissure-bur the upper one-quarter of the root was amputated and removed. The surrounding tissue was found to be carious up to the floor of the nose. The patient being somewhat exhausted another tent was placed in the wound and two days after he was anæsthetized and a large portion of the incisive fossa burred away. (Fig. 3.) The wound was thoroughly ascepticised and lightly packed with iodoform lint and patient directed to use a listerine spray every two hours. He was also put on a tonic of albuminate of iron mixed with the compound syrup of hypophosphite of lime. The dressing was removed every day, being replaced by a smaller one each time. The operation was so severe that it was three weeks before the parts were healed, the

patient being confined to his house for the first week. The result has been satisfactory in every way.

CASE V. Mr. T——, æt. about 53, of vigorous and healthy constitution. He had always taken fair care of his teeth, none of which had been lost. The deposit of salivary calculus had always been dense and rapid in its formation, necessitating very frequent attention to the removal of the same. Having somewhat neglected his

FIG. 3.



A, bone and portion of root removed. B, root canal filled.

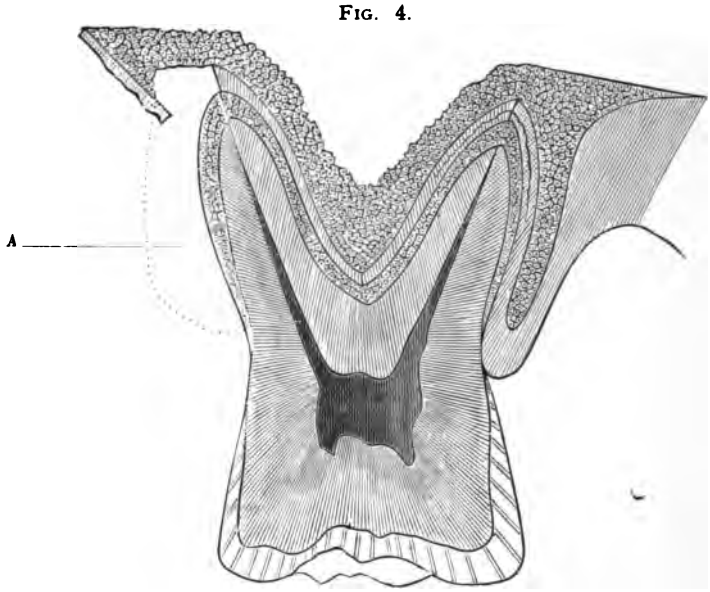
mouth he presented himself in 1889 for treatment. There was an extensive deposit of salivary calculus ; on removing which it became evident that the work of his previous dentist in removing the same had been very superficial. There was considerable tumefaction of the gum and a discharge of pus. Local treatment restored his mouth very speedily to a condition of health with the exception of the superior left first molar.

The palatine root of this tooth was entirely denuded of any covering on its palatal aspect down to the very point of the apex, its nerve connection having long since been severed. No filling

had ever been inserted in the tooth and there was no sign of caries. (Fig. 4.) The rubber dam having been adjusted, a hole was drilled through the centre of the crown, and the pulp, which was found in a very putrescent state, thoroughly removed from the three roots. They were then cleaned and filled as previously described and a permanent filling inserted over the oxyphosphate to close the opening in the crown.

A fine fissure bur was then passed through the palatine root

FIG. 4.



A, entire loss of covering over palatal aspect of palatal root.

close to the crown and the entire root removed. At the point of amputation another permanent filling was inserted. (Fig. 5.)

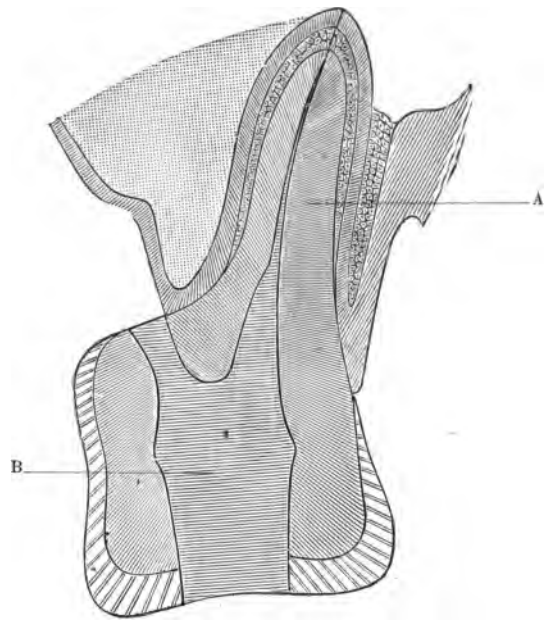
Two weeks later the gum on the palatal side was in a healthy condition, all traces of the imprint of the root had disappeared and the tooth which had been very loose was now firm in its socket supported by the two buccal roots.

This is the most common class of teeth that we meet in which amputation of the roots is indicated. Not only do we restore to usefulness a loose tooth but we stop the absorption of a certain amount of purulent matter.

To briefly summarize: Wherever death of any portion of a root has taken place, the simplest cure is to amputate the necrosed

portion of the root and the tissue will close firmly about the remaining healthy portion, which will suffice to support the tooth. In

FIG. 5.



A, buccal root. B, filling.

teeth of more than one root, where often an entire root becomes necrosed, this may be safely amputated and the tooth generally be well supported by the remaining root or roots.

DISCUSSION.

DR. RHEIN: I suppose all the gentlemen who were present yesterday during the reading of the two papers from this section, recognize a great similarity in the cases reported by Dr. Hugenschmidt and the two cases which I reported of pyorrhœa, complicated by an alveolar abscess, and from a careful perusal of Dr. Hugenschmidt's cases I conclude that he had observed cases very similar to those which I presented, only his had not reached the stage where the pulp had died, though they show a marked tendency in that direction. I believe his cases represent simply a primary condition of the disease, the result of which was portrayed in figures 1, 2, and 3, which I presented.

SECTION I.

Prosthetic Dentistry, Metallurgy, and Chemistry.

Report by W. B. AMES, Secretary of the Section.

Section I. Offers for your inspection as novel, two instruments devised by L. M. Mathews of Lawrence, Kansas:

First, A combination pliers for measuring roots, bending and contouring bands and for punching plates.

Second, A blowpipe to be used with mouth blast, bellows or nitrous oxide, which commends itself by its convenient form.

Of papers, we have to offer, first, "Amalgamation and Dental Amalgams," by Dr. Stubblefield, of Nashville, Tenn.; second, "A System for Constructing Porcelain Front Crowns," by Calvin S. Case, of Jackson, Mich.

In connection with this subject, E. Parmly Brown will describe, with the aid of drawings, an improvement in the porcelain crown presented to this association at the meeting of 1885.

The section have also examined the Floyd porcelain teeth, in which we find features which give them valuable practical utility.

SECTION I.—CONTINUED.

A System for Constructing Porcelain Front Crowns.

PAPER BY C. S. CASE, OF THE SECTION.

From the time that crown and bridge dentures were introduced to the profession of dentistry, they have steadily increased in popu. larity, until to-day they take front rank in the prothetic department- Indeed, the demand for this class of work has become so wide-spread that proficiency in the art of its construction is considered by laymen almost indispensable to the repertoire of a "first-class dentist." And as methods and skill become more perfected, the permanency, usefulness and pleasure which is derived from dentures of this class forces us each year to bow with greater deference to the voice of the people.

In the vast variety of methods which have been presented, many have been found insufficient and impractical; others, because of the difficulties of construction, have not come into general use; and while in the main the trend has been toward that which required of the dentist the least amount of time and skill, as mechanical ability has increased, there has been a constantly increasing growth and perfection of methods which insure permanency, with physiological and hygienic requirements.

I think I may truthfully assent that a large majority of the profession are united in their approval of the band or ferrule extension around the root; but always with the provision that it be made according to exact principles and requirements, *i. e.:*

(1.) That the peripheral surface of the root be so shaped as to make it possible to fit a band which will leave no V-shaped space between root and metal that cannot be closed by subsequent burnishing.

(2.) That the band extend beneath the border of the gum only

so far as to subserve the purposes of strength and prevent the lodgment of food along its edge.

(3.) That the material of which the band is made be thin enough and of a quality which will admit of easy and perfect adaptation to all the inequalities of the root.

Though modes of procedure differ in the attainment of these objects, there is no material difference in the result when the operation has been skillfully performed. In all subsequent steps, however, in the construction of crown dentures—notwithstanding the variety of methods already introduced—I believe there are still many opportunities for improvement.

It will be the object of this paper to suggest certain improvements in the construction of the so-called "Richmond" porcelain front and other tooth crowns.

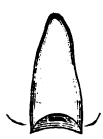
In preparing the face of a root for a "Richmond" crown on any of the six anterior teeth, a most common method is to cut the root squarely off and bevel it anteriorly even with, or below, the margin of the gum. (See Fig. 1.) To the cap which is made for this a

FIG. 1.

Side View.

backed porcelain face is fitted and soldered. The objections to this method will be seen, I think, as I describe in detail another method of making a cap, which will be found in practice easily constructed, well adapted for every requirement, and of more universal application. This was first described by me in the June, 1888, number of the *Ohio Journal*, though used in my practice as early as 1886.

FIG. 2.



Front View.

Dress the face of the root in conformity to the curved border of the gum, as in Fig. 2; the labial edge slightly beneath the gum,

while the palatine may be cut only to the palatine prominence. After the enamel has been cleaved off and the peripheral surface of the root prepared, make the ferrule or band (preferably of pure gold) sufficiently long to hang down from the root—when adjusted to place—about one-half the length of the required crown. Mark on the outside the festooned border of the gum. Remove and cut out a scallop, front and back—on the front even with this line. Re-adjust and dress down with a corrundum stone until the edge of band and root, anteriorly, are slightly beneath the margin of the

FIG. 3.

Front View.

gum. The proximate extensions of the band being left—as in Fig. 3 —to fall along the sides of the porcelain face.

Now bend a piece of platinum, no thicker than writing paper, into this curve before or after removal of the band; solder, trim off surplus and finish. See Figs. 4 and 5. You now have an imper-

FIG. 4.

FIG. 5.

vious cap, the peculiar shape of which offers the strongest possible mechanical attachment to the root; one which is out of sight from the front when properly fitted with a crown, and, what is of more importance—in so far as it tends to limit the bewildering variety of modes—one which can be easily and successfully used as a base for the so-called "Richmond," the Ash, Case and Logan crowns.

When the cap, having been made, is placed in its position on the root, its labial border should fall slightly beneath the festooned

margin of the gum. Take bite and an impression in plaster of the immediate section and make antagonizing models, with the cap in position on the model. You are now ready to fit—at the laboratory lathe—the porcelain tooth for any of the above named crowns. It is perhaps needless to say, in all instances where the cap is not drawn off with the impression, it is removed from root and placed in position before pouring.

A prominently unfortunate and deleterious obstacle, from a hygienic standpoint, has always existed with crown, bridge and metal plate dentures, because of the exceedingly unpleasant possibility of food and decomposing substances finding lodgment in the unavoidable spaces where porcelain has been held mechanically against metal surfaces by pins and solder. This, I am happy to say, can be obviated by the use of what is popularly known as "Jewelers' hard enamel"—a material similar to that which has been used from very early times in various processes of enameling jewelry, etc. It is principally composed of an easily fusible silicate, or glass; the white opacity and different colors being produced by the addition of metallic oxides,—a full description of which may be found in any encyclopædia.

The possibilities of this material in prothetic dentistry occurred to me after seeing Dr. A. E. Matteson demonstrate its use for porcelain inlays at a clinic of the Chicago Dental Society last winter. I first experimented—as you may do in the absence of something better—with enamel broken from old watch dials and ground to an impalpable powder. When this is mixed with water into a thin paste and used as an imbedment or luting between backing and tooth, and in all spaces where porcelain and metal come in contact, the subsequent heat required in soldering will fuse the enamel, and, not only form an impervious stopping against the ingress of secretions, but add greatly to the strength of attachment.

For the so-called "Richmond Crown" select porcelain face, and back with enamel as above, leaving the pins extended, if desired, to grasp post. At this point solder may be flowed around pins, to fuse enamel and prevent displacement during the grinding and fitting process. Another way, and one which I think I prefer, is to cut the platinum backing a trifle larger than the porcelain face. Dish it slightly, fit, and bend the pins so that it will be drawn closely to place. Now, when the moistened enamel powder is laid upon the extended edges of the backing, and the piece

tapped lightly, it will readily penetrate and fill the space beneath, at which juncture it may be fused without soldering, either under a blow-pipe or, preferably, in a gas furnace. (For all purposes of this work I am pleased to recommend "The Parker Improved Gas Furnace.")

Now grind face to fit the cap on the antagonizing model—allowing the proximate extensions to fall along the sides of the backing, and the cervical margin of the tooth to stand slightly in front of the cap; subsequently rounding and finishing the edge to the band.

By all means do not follow the slovenly practice, which is altogether too commonly pursued, of leaving a sharp, prominent edge of tooth to force its way into the gum, with a V-shaped space behind for the lodgment of food and final irritation and absorption of tissue.

Finally prepare root canal, replace cap on the root and punch hole for post—place parts in position—secure with plaster, remove and solder. See Fig. 6.

FIG. 6.

Another method, and one which will be found quite as satifacfactory, is to prepare the root-canal and take plaster impression with post and cap in position; also a bite in wax; afterward being guided entirely by the plaster model of adjoining and antagonizing teeth, in fitting and soldering the crown to its proper relative position. Again, the post may be soldered to the cap before the impression is taken. In either way an undoubtedly perfect plaster model must be made, in order to correctly align and antagonize the crown without further access to the patient till the work is completed.

If for a long bite crown, requiring much material to bring the posterior surface even with the surfaces of proximal teeth, a shell may be struck up, fitted and soldered to the adjoining edges of cap and backing, with less work and material, and with the production

of a crown of natural contour and sufficient strength—the peculiar proximate elongations of the cap being well adapted for this mode of procedure.

The Ash & Sons tubed teeth, which are little used in this country, are admirably adapted for all long bite crowns, being exceedingly strong and of a material which admits of reshaping and polishing in any part without injury to the surface. When used for a crown with a cap and band extension—and with the especially valuable adjunct of enamel, as will be described—where they can be used, I see no reason why they should not be among the most useful and permanent as they certainly are the most beautiful and easily constructed crowns.

The impression having been taken and antagonizing models made with the cap in position, as described, the proper tooth having been selected it should be ground and fitted with great nicety to the curved surface of the cap—the proximate extensions falling along the sides to strengthen the crown and prevent rotary motion. While in position, mark and bore hole in cap for post (clasp metal), which should be drawn to exactly fit tube in tooth. Adjust cap to root and bore through this hole into canal—remove cap and, being guided by the marking, prepare root for post. Replace cap, tooth, and post, and if necessary, bend the post so that the tooth takes its proper relative position. With cap and post in position secure with plaster—remove and solder them together where the post passes through the cap. (See Fig. 7). The tooth is now adjusted and finally fitted to cap—the post and surface of cap roughened to secure a firm attachment of the enamel in which the parts are finally luted to place and brought to the required heat for fusing. (See Figs. 8 and 9.)

FIG. 7.

If the enamel is finely pulverized and mixed to the proper consistency when laid over a crevice with a camel's-hair brush and the tooth tapped lightly, it will be found to enter the smallest space. The excess of moisture should be dried with a napkin or bibulus paper and the work continued until the joint is filled. Where the

interspaces are wide, a second filling and firing will be necessary on account of the contraction of the enamel. If the fusing of the enamel is not done in a furnace, it would be well to invest.

FIG. 8.

FIG. 9.

The "Case crown" is the same as the Ash & Sons tubed tooth, with the exception that the tube is sufficiently large to admit of a second tube which was originally intended to be internally threaded and screw on to a Howe post set in the root. It is well adapted for a hollow post crown, through which the root may be subsequently treated. When constructed in the same manner described for the Ash, it makes a substantial crown, and one in which the hollow post may prove to be a valuable and convenient adjunct.

In fitting the Logan crown to the above-described cap, a slit is first cut in the platinum or gold face, through which the pin or post is forced—the porcelain being subsequently ground and fitted

FIG. 10.

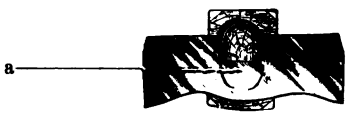
like the others. (See Fig. 10.) When luted with enamel to the cap, and the post soldered (from the upper side) it makes a crown of considerable value, though not as easily constructed nor as perfect in strength or beauty as the Ash.

I now wish to describe a method for making porcelain-front hollow biscupid and molar crowns:

Take an impression of the peripheral surface of the root with silver suture wire, and make a wooden model as described by me in connection with a method of making all gold crowns—published in the June, '85, Cosmos and republished in Richardson's Mechanical Dentistry.

The face of the root should be cut the same as described for the anterior teeth, and the curve reproduced on the wooden model. Cut strip of gold same width as for a Richmond hollow gold crown. By the aid of the model you will be able to outline a flap (a—Fig. 11), which, when partially cut, curved to fit the curve of the root,

FIG. 11.



and turned in upon the model, its edges should extend to the proximate sides of ferrule when in place, to which it should be soldered. The flap should be cut so as to extend only so far upon the face of the root as to meet the backing of the porcelain face, to which it is ultimately soldered. The portion cut out of the ferrule for the flap will leave about the right sized opening into which to fit the porcelain face. (See Fig. 12.)

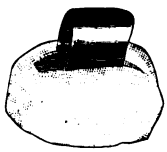
FIG. 12.

It is not always necessary to make a wood model as above. After a ferrule has been fitted to a root, experience will enable one to cut the flap the proper size; when it may be turned in upon the root itself and burnished to place—finally soldering the edges.

Now adjust the ferrule or cap to root and take a plaster impression, which, when filled, will be a correct model of adjoining teeth, with cap in position. A bite should also be taken so as to show antagonizing teeth. Select porcelain face, back as before, and fit in the laboratory, allowing the proximate edges of cap to fall along the edges of the backing as described for the anterior teeth. If sure of alignment the face may now be soldered. In this process

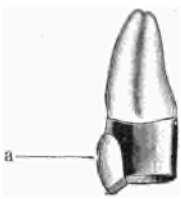
the porcelain only should be covered with a small investment. The hollow loop, through which the heat from the blow-pipe may readily pass, will enable one to easily solder the edges of the backing to ferrule and flap. (See Fig. 13.)

FIG. 13.



Cut the cusp of porcelain face diagonally to receive the gold protecting and antagonizing cusps, (See a—Fig. 14), which may be

FIG. 14.



swaged and filled or struck from a solid piece of pure gold. I prefer the latter—using a steel die-plate. The crown may now be replaced upon the plaster antagonizing models and the cusps fitted properly, articulated and finally soldered. (Fig. 15).

FIG. 15.

It will be observed, I think, that the contour in no large spaces is restored with masses of solder; that solder is used only to close mechanically-fitted joints; and further, the crown being two-thirds hollow, the post need not be soldered to it, but seated in the palatine root-canal and allowed to extend into the hollow space as in an

all gold crown. Again that these bicuspid and molar crowns are similar in construction to the crowns described for anterior teeth; and finally the whole, because of their similitude may be adopted without difficulty as an adequate and complete system for constructing porcelain front crowns, and one which is especially adapted for college instruction, because—as I said before—it limits the bewildering variety of methods which are at present practiced. In closing, permit me to say: It is with no ambition of gaining special merit for originality of design in detail, but rather with a view of presenting to this, the highest tribunal, for their consideration, a scheme by which many dissimilar forces already in the field may be mobilized and marshalled under one head, and their management perfected and simplified for general practice and college work.

SECTION I.—CONTINUED.

Amalgamation and Dental Amalgams.

PAPER BY D. R. STUBBLEFIELD, OF THE SECTION.

Amalgamation is a very old subject, and yet it is a new one in the sense that it is not understood. Of course it is not supposed that there is anybody who makes any pretensions to respectable acquaintance with our profession, who does not know that a combination of one or more metals with mercury forms a compound that we know as amalgam. Nevertheless, it is confidently claimed that the full nature and special characteristics of this interesting combination of metals is not clear in many minds. Further than this, it is known that some even in high places have displayed complete ignorance of everything in connection with its nature except the practical working from a dental standpoint. As this is certainly not commensurate with the high claims that we make for professional standing, the present contribution is made without further apology and with the philanthropic hope that some of the younger men present will feel themselves better informed after it than before. Further than this, little if anything is expected.

The careful listener possibly noticed that it was stated above that the full nature and special characteristics of amalgams were not clear in many minds. We propose to be more accurate now and state that such explicit knowledge is not in any minds regarding the intimate nature, actual and comparative, of amalgams. To speak paradoxically, however, it is because so much is known that is not known, that we venture to call it up at all. Speaking practically, much is known regarding dental amalgams and this we shall present later on.

The remote history of combining metals with mercury is obscure. The philosopher who discovered it is unknown, although history shows that the metals with which it readily unites were known to

the ancients before mercury. It appears that gold, silver, copper, tin, lead and iron preceded it chronologically, for neither Moses nor the older Greek writers who speak of these, make any mention of mercury. Theophrastus, (300 B. C.) seems to be the first to mention it, and he gives a method of preparing it from cinnabar (the sulphide), and he calls it "liquid silver" from which we get quicksilver. The first references made to its combining with other metals, however, we find in later works.

Pliny, middle of first century, says that "all things float in it except gold and that alone combines with it." From that on we find statements, more or less definite, showing that the knowledge of the solvent power of mercury upon other metals was a laboratory tradition. The principal use made of this knowledge by the ancients seems to have been in the recovery of gold, and their method in this connection may be seen to be not very dissimilar to that method of to-day.

It is not our intention to burden you with long quotations from the writers down through the centuries, for such details would be useless when it is possible to extract from them such facts as are pertinent to our present aim. The special point aimed at now is that the union of mercury with other metals—amalgamation—has long since assumed that definite nature that belongs to recognized chemical compounds. At the same time it is not our purpose to make before you a protracted study of various experiments conducted by reliable investigators, which, while interesting, would prove cumbersome here. We can, however, call attention to the phenomena observed and show in which they resemble, and in which they differ, from other substances entering into chemical union. In the matter of the evolution of heat, we find an interesting point. It is quite well known that ordinarily molecular activity is attended by the evolution of heat, familiar to us all in the heat produced by uniting water and sulphuric acid, or water and calcined, pulverized calcium sulphate. These always evolve heat to a greater or less degree. In amalgamations, however, we find that heat is rendered latent in some cases and evolved in others. This was first remarked by Demachy in 1774, from his observations upon tin amalgam and, also, from mixing lead and bismuth amalgams. Little investigation was made along this line for something more than 100 years, when J. Regnauld found that heat was absorbed in the combination of mercury and zinc, and was evolved in

the union of mercury with cadmium. This same experimenter found that amalgamation caused metals to change their places in the electro-chemical series, becoming more electro-positive when heat was absorbed and less electro-positive when heat was evolved. In the first class—heat absorbers—he placed zinc, lead, tin, iron, nickel and cobalt; and in the second—heat evolvers—he placed sodium, potassium and cadmium.

Others have corroborated this experimenter's results, especially regarding the reduction of temperature. Phipson stated that 207 pb. 118 sn. 284 bi, and 1617 Hg. at 170°, was reduced to 10° when amalgamated, causing a fall of 27° of temperature.

It has been definitely ascertained that mercury combines in regular proportion like any other chemical union. We have formulæ for expressing the compounds resulting from a union of Hg with the metals of the alkalis, as Hg_{12}, K or Hg_6 Na, and many other single metals associated with mercury, but as yet we have not seen any compound formulæ to set forth such complicated compounds as our dental amalgams. It is possible that the demand for exact chemical statements among our profession has never been such as to stimulate supply. It will not be long, however, before equal exactness will be just as much the rule in regard to complex as simple association united chemically.

In the matter of conducting heat, Calvert and Johnson published that tin amalgam was the best conductor and bismuth amalgam the worst; and that in each case the conductivity increased with the decrease of the mercury in each amalgam. It is to be regretted that they confined their investigations to tin, zinc and bismuth, for a point of great practical interest lies just beyond and hinging upon such a conclusion. As it is, it might be worth something to the manufacturers of dental amalgam to introduce *bismuth* into their products, as it was the poorest conductor of heat. And in extension of the same idea, the fact that the ratio of decrease of mercury was the ratio of the increase of conductivity suggests the thought that something of a practical nature might easily be elaborated. The subject of thermal shocks is of too much importance for us to neglect to take advantage of any offer from the scientific laboratory. It is customary to hear each manufacturer boasting that his special compound has less of mercury in it than any other, but in the light of this knowledge we should hear just as vigorous

recantation. If there are any present practically interested, it might be well for them to stick a pin at this point.

In regard to the electrical conductivity of amalgams, the results show that the presence of a small quantity of a foreign metal in mercury causes a rapid decrease in the resistance. The conductivity is not the mean of the constituents. This seems to be practically an argument against the use of amalgams, but as it is a moot question as to the real merits of electrical currents in and through the body, the subject could not thus be summarily settled. The alloy of mercury, bismuth and lead conducts better than either of its constituents. In the case of tin and cadmium, and bismuth and lead, we have two groups that act singularly. If tin or cadmium is added to mercury the resistance rapidly decreases as the per cent of the metal increases, and more and more approaches a fixed limit, while if bismuth or lead is added the resistance decreases to a minimum and then rises to a maximum.

Without dwelling longer to present others observations we may readily conclude that amalgamation produces chemical compounds, more or less unstable and uncertain in their actions under examination. The fact that heat is absorbed instead of being evolved does not argue against the chemical nature of the combination, for the excess of mercury would doubtless absorb more heat than is produced by the new formation. The definite amalgams, as far as they are known, are crystalline in structure and it may be that instead of dissolving in mercury as salt does in water, *i. e.*, breaking down to the molecule, the mercury disintegrates the alloy to nothing smaller than the crystal unit, so that when the mass is squeezed through chamois leather the crystal units which have collected in masses of sufficient size cannot pass through the pores of the skin, while the smaller masses and the single crystals are readily forced out.

The history of amalgam, however, from the standpoint of the dentist is not so old. Many of those present doubtless recall its earliest advent. I have been unable to obtain any authentic account of its first discoverer or the one who presented it first to us. Filing silver coins for use in this way seems to have constituted the first alloy devoted to it, and yet at this early date no idea of preparing special alloys for the purpose, seems to have entered into any mind. At first not only was the use of it treated with suspicion, but actual enmity and outright opposition was developed.

Whether this precarious condition of existence was the cause or something else. I do not know, but everything in connection was vague and uncertain. Those who dared to use it felt guilty, and like Peter were ready to swear they did not *know* it, much less use it, when confronted by the accusation. It was a sort of "moonshine" business throughout, and the great wonder is that it survived such powerful and unrelenting, and indiscriminating persecution. For a long time nothing definite could be known of its qualities, and if there did not exist the law in nature and all things else called the *survival of the fittest*, it would be known to-day only as a tradition, only as a folly that died a natural death. But such is not the case. It still lives and has asserted itself, so to speak, in the very teeth of its defamers, and holds to-day a more or less conspicuous place in almost every office in the land.

Owing to this uncertain tenure upon existence, as cited above, it is not to be wondered at that little if any method governed its early preparation. Empiric combination of almost any metals, so they differed, was the vogue, hoping thereby to accidentally discover something that would render its use respectable among dentists and its user entitled to consideration, if not equal respect with his brethren. It would render this article intolerably long, however, to attempt a detailed account of what was done, even if I could possibly obtain a correct history; and as such a narration would be useless, no such effort has been made. Suffice it to say, that varying compounds presented as diverse qualities as they themselves were various. All of them would not answer well as dental amalgams. They did not have sufficient edge-strength, or did not keep their color sufficiently well, or did not resist the disintegrating effect of saliva, aided by heat and moisture and the adventitious presence of organic acids, resulting in the discoloration of the tooth-structure by unsightly sulphides, or they had special tendencies in themselves to expand or contract when setting. These properties, by the presence of some metals and the exclusion of others, were gradually brought within control.

From a practical view of the subject, the influence of the different metals is full of interest. Tin unites readily with mercury, making a smooth, unctuous compound, but it sets slowly, and when it is crystallized it is not sufficiently hard to resist the force of mastication. Then there is a marked tendency in this union to assume the globular form, causing it to leave the edges and bulge

up in the center. Its value then is almost entirely destroyed by these objections.

Silver, while it does not unite as readily as tin, will slowly yield to the power of mercury; but, it also has the objectionable trait of setting slowly. In addition, it has the tendency to expansion, though not in so marked a degree as that of tin and mercury. This expansive quality, it may be remarked, has been denied by some investigators, who claim that on the contrary it first contracts in setting and finally expands to a dangerous extent, when the force of expansion is exerted upon the lateral walls of a tooth.

Gold seems to unite readily with mercury, but it requires some time and even elevation of temperature to insure perfect and uniform admixture. When mixed it does not harden to a sufficient extent to give a good dental amalgam.

Platinum does not unite readily with mercury, but a smooth amalgam can be obtained by rubbing finely divided platinum with mercury in a heated mortar. It does not harden well when combined, though it quickens the setting.

Copper, also, does not unite readily with mercury, and requires heat to induce union. When obtained in a very finely divided state by precipitation from some of its salts in solution and heated, it may be quite readily brought into union.

Zinc forms with mercury an exceedingly brittle amalgam, as might be expected, which has no use whatever to the dentist as an amalgam. It plays a part, however, in contributing valuable properties which we shall note in our conclusions.

The foregoing metals, while not composing the entire metallurgical list, about represent those constituting the valuable ones to the dentist. We have seen that, with greater or less facility, they all combine with mercury, but that no one is able alone to yield with mercury a satisfactory compound to meet the requirements for a perfect dental amalgam. Tin makes an unctuous plastic, but is too soft and expansive when set; silver makes a smooth compound, but does not give a safe result; gold unites at all temperatures, but does not get hard enough for use in the teeth; and platinum and zinc yield more or less slowly and yet form too brittle amalgams to meet the demands. It is only when the crossing and intermixing begins that we obtain the qualities we desire.

The easy plasticity of tin forms a good basis upon which to introduce the less yielding metals; while they in turn control the

tendency of tin to assume the spheroidal form and give the requisite hardness to the resulting compound. Strange to say, gold that unites apparently readily though really with reluctance, hastens the slow action of tin, and while not fully meeting the demand tends to harden the resultant. Platinum, true to its colors, yields reluctantly at all times and gives quickness to setting, and brittleness to results. By a judicious throwing together of several of these constituents, each with its own individuality contributing to and modifying the whole, practical workers have been enabled to reach satisfactory combinations. The greatest care should be exhibited in the combining of these metals, differing as they do in fusing point and in other particulars, so that the alloyed stick or mass should be thoroughly uniform. Then another point, which has not been sufficiently emphasized ordinarily, is that each different combination should have just a certain quantum of mercury added to yield the best results that it is capable of. The average dentist is very negligent, not to say ignorant or indifferent, about the way he gets his plastic into workable shape. Each compound—to repeat—should have just a definite quantity of mercury to bring out its best qualities, and the results are modified very much by the excess at one time or the too little plasticity at another.

The action of zinc in amalgams, referred to above, when present in a very small proportion, seems to control the expansive or shrinking quality, and then to enable it to keep its color against the darkening effects of the sulphuretted hydrogen and other agencies that discolor. Of late I have been partial to the compounds that contain this metal, and I think as good if not better results are obtained than from those that lay their claims for popularity upon their ability to render black themselves and the teeth. Copper amalgams, whether composed of that metal alone and mercury, or with copper as an incidental constituent, have been very loud of late years in claiming excellence.

I am perfectly willing to concede to them an equality but nothing more. I confess I cannot subscribe to the theory that claims therapeutic action through the permeation of the copper salts into the tooth structure. It seems to me that to have permeation we must have solution and to say that the filling is slowly dissolving away is to claim a very questionable property for it. I am willing to suppose and admit that copper salts have a germicidal power, but I am not able to see that these same soluble salts can be

obtained from the mass, put there to stop a breach, without a gradual loss of bulk, which in turn must cause it to fail to do its duty as a filling. Therefore, I say again, I am willing to yield to a claim for equality but not for superiority, unless the claim be based on other than its power to permeate the tooth with salts of healing derived from itself without loss of structure.

In conclusion, a few words about the use of amalgam as a filling. Fortunately or unfortunately for me, I was born into the profession after the day when a dentist of ability scorned the use of such a disgusting and discoloring filling material as amalgam. I was born, so to speak, when a better knowledge and a broader philanthropy was beginning to acknowledge the claims of genuine merit that such a plastic does possess. The profession was beginning to think that certainty might very profitably be substituted for uncertainty in such places as it was physically impossible to place the first portion of gold and then add the rest without ever displacing the first. The strength of a chain must always be measured by its weakest link, and the profession at large must be measured by a less high standard than the best and most skillful in it. It might, upon this hypothesis, be allowed that certain ones of the profession were able to operate infallibly, at all times, under all circumstances of daily professional life, and still the claim be justly made that the profession as it stood related to humanity could not claim to be universally on a level. And while I am not blind to the fact that if we never strive patiently and earnestly, and conscientiously to attain high ground in professional skill, we never will rank high as operators, still I claim that some can never reach that excellent estate. Therefore, I make the plea, although I am glad to say it is no longer necessary, for the use of *plastics*, inside of the pale of respectability in the profession.

Slovenliness and slipshod ways in anything are disgusting, and certainly they are so in a profession that is as exacting in the perfection of its details as dentistry, and I make no plea for such methods. I merely wish to claim that there are cavities, in certain mouths, that from the very nature of the disabilities under which the operator must labor, can better be filled with plastics than anything else by anybody.

My plea for the material itself is based upon this, that it has not had a fair chance in the world. It was born under adverse circumstances and under unpropitious stars, and it was at once

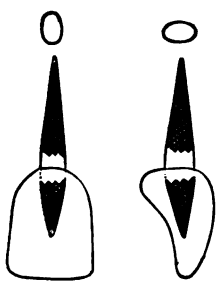
relegated in effect if not in fact, to the kitchen and the scullion. It was not used nor recognized by the best and most expert operators at all, and when it was tolerated it was merely to begin an unequal fight for existence as the custodian of a tooth, "not worth anything so expensive as gold." It has been sneered at and scoffed at since its earliest hour and yet like another "ugly duckling" it has survived disgrace, and I think the day is not far off when the best and deftest will hail it as the truest and best friend when their need is the sorest. Give it a trial. It is being given a show at last, a fair trial almost everywhere and by everybody, and it will yet convince the most skeptical that it has qualities that render it valuable in very many places. A year ago, in Galveston, I was taught that it was excellent for filling the canals of pulpless teeth. Since that time I have used it carefully and, I am glad to say, with better success than anything else I ever used as a root-filling. Dr. Miller, of Berlin, in his tabulated statement of the relative germicidal power of the various filling materials, puts copper amalgam at the head—the only one, if I remember correctly, that did seem to exert any opposition other than a physical one of *lockout*. If this is so, and if in root-canals we desire antiseptic power present, it seems to stand to reason that the practice is good. At any rate, I state it as true that it has been my friend for the past year in such cases. Therefore, I ask you to try it.

SECTION I.—Continued.

A New Pin for Porcelain Teeth.

By E. PARMLY BROWN.

Dr. E. Parmly Brown: Since I presented to this association a taper-pin porcelain crown at Minneapolis, which was received so kindly, I have made an improvement upon the pin. I here have a diagram illustrating it. These pins are made in four different sizes, and tapered at both ends so that you can select the pin to suit the case you are working upon. The form of most of the channels at the cervical border is oval. The pin should be about the size of a normal channel. Never cut away the dentine to put the pin in place if you can avoid it. There is no rule to be laid down, but you should keep all the tooth substance you can, to avoid splitting. The pin is milled at both ends to hold better in both porcelain and cement.



SECTION IV.

Histology and Microscopy.

Dr. A. O. Hunt gave a lantern exhibit to demonstrate his theory regarding the blood supply to the dental pulp, and Dr. W. X. Sudduth also gave a lantern exhibit illustrative of the minute structure of some oral tumors.

Owing to the inability of the exhibitors to furnish drawings in time, the illustrations could not be presented in this year's transactions.

Publication Committee.

STANDING RESOLUTIONS.

The following standing resolutions are in force at this time, August, 1891 :

Resolved, That henceforth no person shall be received as a delegate who is in arrears for dues, or until he has paid to the Treasurer the full amount due at the time his name was dropped for non-payment.

Adopted August, 1874.

Resolved, That hereafter no dental college shall be entitled to representation in this Association that does not require a good English education as a preliminary qualification for its matriculants, to be ascertained by examination.

Adopted August, 1879.

Resolved, That in order to secure representation in this Association, dental colleges must, subsequent to October, 1881, require all students entering therein to take two full courses of lectures previous to coming forward for examination and graduation, and must also state these conditions in their next annual announcement.

Adopted August, 1880.

Resolved, That hereafter no society shall be entitled to representation in this Association that does not require its members to live up to the requirements of our Code of Ethics.

Resolved, When it comes to the knowledge of the Committee on Credentials that any applicant for membership is violating our Code, said applicant shall not be received, and all such applicants shall be referred by the Committee to the societies whose delegates they are, and in no case shall this Association be compelled to treat with violations of the Code, except where the violator is a member of this body and has no membership in any local society.

Adopted 1881.

Resolved, That the Secretary be instructed to assign members, who may neglect to make their own choice, the Section in which they are expected to work.

Adopted 1879.

Resolved, That the reports of Sections shall be called by the President in consecutive order, beginning each succeeding year one number higher than on the preceding year.

1879	commencing	with	No. I.	1887	commencing	with	No. II.
1880	"	"	No. II.	1888	"	"	No. III.
1881	"	"	No. III.	1889	"	"	No. IV.
1882	"	"	No. IV.	1890	"	"	No. V.
1883	"	"	No. V.	1891	"	"	No. VI.
1884	"	"	No. VI.	1892	"	"	No. VII.
1885	"	"	No. VII.	1893	"	"	No. I.
1886	"	"	No. I.	1894	"	"	No. II.

Adopted 1879.

Resoled, That a paper presented to the Committee on Voluntary Essays and by them considered and returned to the writer with notification that the said paper is not accepted, cannot afterward be read before the Association unless it is made the special order by resolution adopted.

Adopted 1885.

It shall be the duty of the Executive Committee of the Association to provide at the opening of each annual meeting a book for the registration of members or visitors as they arrive, which shall also give place of residence and hotel where each may be found.

Adopted 1886.

Resolved, That in the future this Association discountenance the giving of banquets, excursions, entertainments, etc., by local professional societies or individuals, either during or at the close of our annual meetings.

Adopted 1886.

Resolved, That it shall be the duty of the chairman of the Credentials Committee to procure and keep a book wherein each delegate who wishes to be considered a permanent member of this Association shall enter his name.

Adopted 1886.

Resolved, That any member of the dental profession who has been in reputable practice for a period of fifty years may be elected to permanent membership in this Association without the payment of dues; and any member of this Association who has been in practice for a like period shall have his dues remitted thereafter by presenting the fact to the Treasurer of the Association.

Adopted 1889.

WHEREAS, The National Association of Dental Faculties has passed a resolution adopting a three years' course of instruction after matriculation as essential to graduation; therefore

Resolved, That in the future no dental college shall be represented in this Association that does not comply with the course of instruction adopted by the college association named.

Adopted 1889.

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